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CANADIAN PUBLIC HEALTH JOURNAL

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The Development of Public Health in British Columbia

J. T. MARSHALL

Inspector of Vital Statistics, British Columbia

BRITISH COLUMBIA'S history dates from the landing of Captain Cook at Nootka, Vancouver Island, in the year 1778, and from that time forward many medical men have been prominent in the development of the province.

It was not until February 23, 1869, however, that any attempt was made to provide the machinery for the care of the health of the people. On that date the Legislative Council of the (United) Colony of British Columbia enacted legislation entitled "An Ordinance for promoting the Public Health in the Colony of British Columbia". This ordinance marked the first step in British Columbia's administration of public health, and the preamble thereto read as follows:

> "Whereas it is necessary to adopt measures with the object of preventing or guarding against the origin, rise, or progress of endemic, epidemic or contagious diseases, and to protect the health of the inhabitants of this Colony, and for this purpose to grant to the Governor-in-Council extraordinary powers to be used when urgent occasion demands."

Most of the provisions of the ordinance could not be made use of until the Governor-in-Council had taken action in making rules, regulations, etc. Provision was made for the definition of health districts; the making of sanitary regulations; the establishment of local boards of health; and for the enforcement of such rules and regulations as might be put into effect. Provision was made for the appointment of an official to be called the health officer, to act should an epidemic break out which might endanger life, or for other purposes concerning the public health. Such appointment was to be of a temporary nature and for duration of the disease, etc., only.

When British Columbia became a province of the Dominion of Canada on July 20, 1871, the ordinance became part of the statutes. It was included in the Revision of Provincial Statutes of 1888 and remained on the statute books until the year 1893. Very little work was done under the first Act, probably owing to the fact that the bulk of British Columbia's population was of a cosmopolitan class ever on the move, following the discoveries of gold from place to place; Victoria and New Westminster were practically the

only towns in which there were any real "residents". The census of 1871 gave the whole population as 36,247; that of 1881 as 49,459; and that of 1891 as 98,173.

In the summer of 1892 came a serious outbreak of smallpox and until that time no important order-in-council had been passed under the Act. A panic spread throughout the coast cities and public demand induced the Provincial Government to take the necessary action to prevent the further spread of the disease. Dr. Davie was then appointed Provincial Health Officer, the first such officer to be appointed in British Columbia. Acting under the regulations that were quickly drawn up and proclaimed under authority of the Act, he was able to check effectually the spread of the epidemic. Of course, under the authority of the Municipal Act, municipal councils were empowered to legislate on health matters, but action taken by virtue of such authority was necessarily restricted in scope and lacked unanimity when uniformity and correctness were required.

During the same year cholera had been prevalent in many of the cities of Europe, and this continent was seriously threatened. The approach of this plague served a good turn, since it, too, influenced the growing opinion as to the necessity of more effective legislation regarding the public health. As one result of this opinion a set of sanitary regulations was promulgated by order-in-council.

THE PUBLIC HEALTH ACT OF 1893

As a direct result of the above a new Act entitled "An Act respecting the Public Health" was introduced at the third session of the sixth parliament and was passed on April 12, 1893. This Act was broader in its provisions than the old one, and contemplated bringing into existence an efficient board of health for the province, which was to study the causes and to labour to prevent disease, not merely to deal with it should it unfortunately make its appearance. Local boards of health were also created, consisting in municipalities of the Council, and in outlying districts of the Government Agent or of such other constitution as the Lieutenant-Governor-in-Council approved.

Power was vested in the Provincial Board of Health to override a local board of health which was negligent in its duty, or refused to carry out the orders of the Provincial Board in all matters concerning the protection of the public health.

Among the duties assigned by the Act to the newly appointed Board were the following: To take cognizance of the interests of health and life among the people; to study the vital statistics of the province; to make sanitary investigations and enquiries regarding the causes of disease and especially of epidemics; also of the causes of mortality and the effects of localities, employments, conditions, habits and other circumstances upon the health of the people; make suggestions regarding the prevention and limitation of contagious and infectious diseases; inquire into the action to that end being taken by local boards of health; also to inquire into the sanitary condition of public institutions and buildings; to acquire and disseminate information concerning

the public health and distribution of sanitary literature; to issue regulations (subject to the approval of the Lieutenant-Governor-in-Council) for the prevention, treatment, mitigation and suppression of epidemic, endemic, infectious or contagious disease. Speaking broadly, it was, in fact, the duty of the Board to concern itself with all things affecting or likely to affect the public health.

The Board at once commenced the work of organization. It prepared regulations regarding smallpox, scarlet fever and diphtheria, and supplemented them by a comprehensive pamphlet on disinfection. The regulations embody provisions for the enforcement of modern methods of isolation and quarantine, disinfection, vaccination, etc. They provide for the appointment of medical and other health officers and the establishment of isolation hospitals and suspect stations.

The Secretary of the Board was required to prepare an annual report on the vital statistics of the province. This latter requirement, however, was not given effect until April, 1911, when all vital statistics were put under the control of the Board.

There was at first a disposition to under-rate the usefulness of the Board, more especially as the expense of conducting the work on the scale contemplated by the Act involved considerable expense during "time of peace", and as a consequence the appropriation made by the legislature was limited. A series of events occurred, however, to call for active interference and the unexpended balance of the previous year was called into requisition by order-in-council, which enabled the Board to perform its functions more fully than otherwise would have been possible.

This first Provincial Board of Health consisted of the following prominent medical men: John Chapman Davie, M.D., Victoria, as chairman; John Matthew LeFevre, M.D., Vancouver; Richard Eden Walker, M.D., New Westminster; Louis Thomas Davis, M.D., Nanaimo; and Alfred Tennyson Watt, M.D., Victoria, as secretary.

During the year 1896 a serious outbreak of typhoid fever in the Kootenay district of the province proved the value of the new Act, and the secretary of the Board, Dr. Watt, made a personal tour of the infected district. On his return Mr. Clive Phillips-Wooley was appointed sanitary inspector to see that the regulations were carried out.

THE HEALTH ACT, 1899

By authority of "An Act to amend the Health Act", which was passed on February 27, 1899, the Provincial Board of Health in operation at that time was abolished, and the Lieutenant-Governor-in-Council, consisting of the premier and his ministers, became the Provincial Board of Health. Provision was also made for the permanent appointment of a qualified medical practitioner as secretary to the Board, and Dr. C. J. Fagan was appointed to fill this position, assuming practically full control of all matters pertaining to public health. It also provided that there should be a local board of health

in each municipality as before, but specified that such local board was to consist of the municipal council; and that the Lieutenant-Governor-in-Council might, in the case of epidemic in a municipality, by proclamation postpone the holding of a municipal or school election for a period not exceeding three months.

Dr. Fagan continued as secretary of the Provincial Board of Health until November, 1914, when continued ill-health forced him to resign, and he died at Victoria, on February 10, 1915. Dr. Fagan was an Irishman by birth, with that fighting spirit so characteristic of the race, and was mainly responsible for the fight waged in British Columbia against tuberculosis. It was through his efforts that the Anti-Tuberculosis Society was formed, while the sanatorium at Tranquille will ever be a monument to his memory, for without his untiring work it is doubtful whether the sanatorium would have been built.

On May 11, 1901, an amendment to the Health Act was directed to the prevention of the spread of tuberculosis in the province. The use or sale of milk from cows suffering from tuberculosis was prohibited and cases of tuberculosis were required to be reported.

On February 10, 1904, a further amendment to the "Health Act" provided for the appointment of a commissioner appointed under the "Public Enquiries Act", to investigate the sanitary condition of any part of the province, should occasion arise. It also provided for the inspection, by the local health officers, of logging, lumber, railway, saw-mill and mining camps as to their sanitary condition and for examination of their water supplies.

On the same day an Act entitled "An Act respecting Sanitary Drainage Companies" was assented to, which provided that plans of works to be constructed by sanitary drainage companies should be submitted to the Provincial Board of Health for approval.

An amendment to the "Health Act", which received royal assent on the 12th day of March, 1906, provided for examination of foodstuffs, etc., and enlarged upon the requirements for notification of cases of contagious or infectious diseases.

APPOINTMENT OF THE HON. DR. H. E. YOUNG

The Provincial Board of Health of British Columbia was under the direct jurisdiction of the Attorney-General until March 17, 1906, when it was transferred to the Agriculture Department. Less than a year later, on March 6, 1907, it was transferred to the Provincial Secretary's Department, where it has remained ever since.

From March 6, 1907, until December, 1915, public health activities in British Columbia were under the supervision of Henry Esson Young, B.A., M.D., C.M., LL.D., as Minister of Education and Provincial Secretary in the McBride Government, while on June 1, 1916, by virtue of his appointment as Secretary of the Provincial Board of Health and Registrar of Births, Deaths, and Marriages, he assumed direct control.

Public health in British Columbia has progressed during the 26 years of Dr. Young's able guidance from a small struggling organization into a well

balanced, smooth working machine. The high health standards which exist in the province to-day are due largely to his far sighted policies. Progress would have been more rapid had it not been for the exigencies of the Great War and other adverse conditions which have prevailed during the last few years.

SCHOOL MEDICAL INSPECTION

During the year 1910 the first real advance in public health administation in British Columbia began, for on the 29th day of February of that year, at the close of the first session of the twelfth parliament, an act entitled "An Act to provide for the Medical Inspection of Schools" was assented to. It provided for the appointment of school health inspectors in the cities, district municipalities, and unorganized districts of the province; such inspectors were required to be duly qualified medical practitioners; for the medical examination of every school child in the province once a year, together with those officials who were in any way connected with the schools; for reports on the condition of school buildings and properties; that following the examination of a child a report should be sent to the parent pointing out the existence of defects, if any, and advising that the family physician or dentist be consulted. A complete record of the physical condition of each child was kept on cards provided, which remained in the school; if the child changed schools, the card was transferred. The cost of inspection was borne by the cities and municipalities, and in the large unorganized districts of the province directly by the Provincial Board of Health.

A detailed statement of the examination in each school has been published in the form of an annual report, sometimes as a joint report with the General Report of the Board and at other times separately. In these reports particular attention of the local organizations was drawn to the condition existing in their respective schools.

FURTHER AMENDMENTS TO THE HEALTH ACT

On March 1, 1911, an amendment to the "Health Act" provided for dealing with ventilation in theatres, boarding houses and other public buildings; for regulating plumbers and plumbing in public buildings; for the making of regulations in respect to vaccination or re-vaccination, and providing the course of procedure to be taken by any person who conscientiously objected to vaccination.

On the same day an Act entitled "An Act respecting Health Regulations for Lumber Camps, Railway Camps, Mining Camps, Saw-mills, and other places in which Labour is Employed" was given effect, providing that the Provincial Board of Health might make regulations governing the sanitary conditions of such camps.

During the year 1911 the Statutes of British Columbia were revised and the amendments to the "Health Act" referred to were consolidated into one Act.

On March 6, 1915, at the third session of the thirteenth parliament of

British Columbia, the "Health Act" was again amended. Provision was made for the appointment of other officers and clerks to assist the Secretary in the due supervision and enforcement of the Act. Changes were made in the legislation respecting water, waterworks, sewerage and sewage-disposal control.

At the second session of the fifteenth parliament on December 3, 1921, the "Health Act" was further amended, the scope of control of infectious or contagious diseases being greatly extended.

On December 16, 1922, at the following session of parliament an amendment to the "Health Act" provided for the regulations and prohibition of privies in dwellings.

During 1924 the Statutes of British Columbia were again revised. The "Health Act" was consolidated, and while every section was re-worded and given clearer meaning, the main provisions remained as before with the aforementioned amendments incorporated into the main Act. One new feature of the revised Act was that it stipulated that the Secretary of the Provincial Board of Health was to be known as the "Provincial Health Officer".

At this time the "Medical Inspection of Schools Act" was incorporated with the "School Act", although the administration of school inspection remained under the Provincial Board of Health.

PROVINCIAL CONFERENCE OF MEDICAL HEALTH OFFICERS

Appreciating the importance of an annual conference of medical health officers, 25 municipal officers met on the invitation of the Provincial Board of Health on June 17, 1914, in Vancouver under the chairmanship of Dr. F. T. Underhill, then Medical Officer of Health for Vancouver. In spite of the absence of many on war service, a second meeting was held on September 12, 1917. The meetings extended over two days and the reports of the papers presented indicated keen interest and appreciation. It is regretted that it has not been possible to continue these annual conferences.

DEVELOPMENT OF SANITARY INSPECTION

During 1903 there were 47 salmon canneries in the New Westminster district, and Capt. F. S. DeGrey, a Master Mariner and certified St. John's First Aid Man, was appointed cannery inspector. At that time all fishing was done from boats, propelled by oars or sails, the Straits of Georgia being literally covered by thousands of sailing craft, and excursions from Vancouver and elsewhere to Steveston to view the start of fishing week every Sunday evening at 6 o'clock were most popular. Capt. DeGrey was appointed assistant sanitary inspector on April 1, 1912, and was acting secretary of the Provincial Board of Health from November 1, 1914, until June 1, 1916.

On April 1, 1917, he was appointed chief sanitary inspector, the position he still retains. During 1917 the Board procured the vessel now known as the "Sanita", a 65-foot power boat, which is still in commission and giving first class service in enabling the sanitary inspector to visit the canneries, logging camps, etc., up and down the 6,000-mile coastline of the province.

Most of the organized territory and districts of the province have their own sanitary inspector, but in the unorganized territory and districts that are without these officers the constables of the Provincial Police Force are *ex officio* sanitary inspectors, and to this splendid body of men the Provincial Board of Health owes a great debt of gratitude for what it has accomplished in bringing the sanitary conditions of the province to such a high standard, as well as in its other lines of work.

Another industry in the last few years to create a problem for this division is the fur farms, from which numerous complaints have been received. Happily the disputes arising therefrom have been satisfactorily settled.

LABORATORY SERVICES

In the year 1913 a Provincial Laboratory was established in the city of Victoria. During the period of the Great War this work had to be suspended. In 1920 arrangements were made with the Provincial Royal Jubilee Hospital, Victoria, and the Vancouver General Hospital, whereby public health laboratory work was carried on on a contract basis. Similar arrangements were effected with the Royal Inland Hospital, at Kamloops, in October, 1924, and with the Kelowna General Hospital, in April, 1928. In November, 1932, an agreement was made with a private laboratory in the city of Trail to serve this area. To meet the needs of the rapidly expanding work, a Provincial Laboratory was equipped and opened in Vancouver in August, 1931. The capital expenditure was borne by the Provincial Government while the operating expenses are shared by the city of Vancouver and the Provincial Board of Health.

Complete facilities are offered to physicians throughout the province for laboratory services. Outfits for the collection and mailing of specimens are provided to physicians outside of Vancouver and Victoria, whose needs are met by the local departments of health. Biological products, a few of which are prepared in the Provincial Laboratories while others are obtained from the Connaught Laboratories of the University of Toronto, are distributed free to physicians, government agents and hospitals.

EPIDEMIOLOGICAL SERVICE

In 1915 medical practitioners throughout the province were provided with cards for the reporting of communicable diseases and efforts were made to improve the reporting of such diseases as were required at this time. It was, however, not until September, 1929, that a provincial epidemiologist was appointed to the staff. This appointment made possible an elaboration of the system of notification of communicable diseases and the adoption of a regular weekly report from physicians. The report cards are mailed to physicians weekly and reports are received from fully 90 per cent of the physicians.

PUBLIC HEALTH NURSING SERVICE

On April 13, 1917, the first appointment of a public health nurse in British Columbia was made at Saanich. In 1921 three nurses were appointed in this municipality and two at Duncan, marking the organization of a provincial public health nursing service. From this small beginning in 1917 the service now includes 35 full-time nurses. In addition there are 32 school nurses engaged in public health work. The service is under the direction of the Provincial Health Officer and all nurses appointed are required to have special training in public health in addition to their nursing qualifications.

During this period full-time health units have been organized in Saanich, Kelowna and North Vancouver. The first unit to be organized was Saanich. In 1921 the Saanich War Memorial Health Centre was formally opened, constituting headquarters for the health unit's activities. The staff at present consists of its original full-time medical officer, four public health nurses, and a sanitary inspector. In 1922 a public health nursing service was established for the city of Kelowna and in 1928 this was extended to include the district of Kelowna. In August, 1929, a full-time health unit was established. In the fall of 1930 a third full-time health unit was established at North Vancouver. Three cities in the province, Vancouver, Victoria and Trail, and one municipality, Burnaby, have medical services under the direction of full-time medical officers and with well organized public health nursing services.

The organization of the health units in British Columbia has been greatly facilitated by the interest of the International Health Division of the Rockefeller Foundation. In the organization of units the Rockefeller Foundation has made substantial financial contributions. The granting of fellowships by the Foundation for post-graduate study or special training has been greatly appreciated.

It is of particular interest that the first university in the British Empire to offer a course in nursing leading to a university degree was the University of British Columbia. In 1919 a five-year course leading to the degree of B.A.Sc. (Nursing) was provided. The course consists of three years' university training and two years of hospital training in an approved institution. Provision was also made for the training of graduate nurses in a one-year course leading to the Diploma in Public Health Nursing.

TUBERCULOSIS CONTROL

In August, 1923, a division of Tuberculosis Control was established in the province and a travelling diagnostician appointed. Clinics are held from time to time in all parts of the province and at regular intervals in the larger centres, with the exception of the city of Vancouver. Accurate reports of all cases examined by the travelling diagnostician are kept and the follow-up work and location of contacts is energetically pursued.

During the years 1925-26, in connection with the Canadian Tuberculosis Association and with the assistance of the Federal Department of Indian Affairs, a tuberculosis survey among the Pacific Coast Indians was carried

out under the direction of Dr. H. W. Hill, Professor of Health in the University of British Columbia and Director of the Provincial Board of Health Laboratories, together with Dr. Vrooman, former Superintendent of the Tranquille Sanatorium, and Dr. A. S. Lamb, Tuberculosis Diagnostician.*

In 1928 the Tranquille Tuberculosis Society, from funds derived from the sale of Christmas seals, provided a nurse to assist the diagnostician, while an X-ray service has been maintained and a portable machine provided from the same source. Through a bequest of the late David Spencer, a building was erected to accommodate a tuberculosis clinic in the grounds of the Provincial Royal Jubilee Hospital, Victoria, as a separate unit. The first clinic was held there on March 13, 1928.

In the city of Vancouver a re-organization in the handling of tuberculosis was brought about early in 1933 and gives great promise for the future. Ninety beds have been provided in the tuberculosis building of the General Hospital and the work, which previously was attended to by the Rotary Clinic, has been placed under the direction of the city medical officer of health.

The Tuberculosis Sanatorium at Tranquille is under the direct control of the Provincial Secretary's Department, as are all other eleemosynary institutions.

CONTROL OF VENEREAL DISEASES

On March 29, 1919, "An Act for the Suppression of Venereal Diseases" was passed. The provisions of the Act were similar to those adopted by the various provinces following an agreement with the Department of Pensions and National Health, Ottawa. By this plan the Federal Government participated financially in the control programme. The Federal grants for this purpose, however, were discontinued in 1932. The legislation provided for the reporting of cases, for the maintenance of secrecy, for the establishment of clinics for free treatment, and for the prohibition of the advertising of drugs for the treatment of venereal disease, etc. The Provincial Health Officer was responsible for the immediate direction of the programme.

During the twelve years' operation of the clinics the cases in the mental institutions of the province suffering from the after-effects of syphilis have been reduced by more than 50 per cent. At the clinics during 1929 there were 46,202 treatments given, of which 39,000 were treatments for gonorrhea. During the year 1932 these figures were 63,677 and 47,428, respectively.

VITAL STATISTICS BRANCH

Organized under the authority of "An Act respecting the Registration of Births, Deaths and Marriages in the Province of British Columbia" in 1872, the branch was under the control of the Registrar General of Titles from 1872 until 1911, with the exception of a two-year period from 1899 to 1901, when it was under the direct control of the Provincial Secretary.

In 1911 the office of the Registrar of Births, Deaths and Marriages was

**For résumés of the Survey, see the Annual Reports of the Canadian Tuberculosis Association for 1926 and 1927.*

created, and in 1913 provision was made whereby the Secretary of the Provincial Board of Health should be, ex-officio, Registrar.

In the early days of registration the registration districts corresponded to the electoral districts of the province. As new districts were made, some were defined and others were not, so that by 1913 a state of chaos existed. In that year, in an effort to straighten out the situation the Mining Divisions were used as a basis for the districts and this, with sub-divisions and other temporary measures, pertained until August 21, 1930, when the machinery for the definition of the registration districts for administration purposes was finally completed.

For statistical purposes, Standard Statistical Publication Areas—created by the Dominion Bureau of Statistics and the Provincial Department of Lands for the purpose of the census—were adopted on January 1, 1932.

In 1911 the Bertillon Classification of Causes of Death, as prepared at the Second International Decennial Revision in Paris in 1909, was established as the standard of classification of causes of death in British Columbia.

Prior to 1916 the Indians of British Columbia, being wards of the Federal Government, were excluded from registration of births, deaths and marriages. In that year, at the request of the Department of Indian Affairs, legislation admitting the Indians to registration of births, deaths and marriages with the province, as a separate unit, was provided.

From January 1, 1920, the Vital Statistics Branch has co-operated with the Dominion Bureau of Statistics along with the other provinces. The "Model Act", as prepared, was not adopted, however. On April 27, 1920, the provincial forms then in use were abolished and the standard forms issued by the Dominion Bureau used.

During 1923-24 the Branch co-operated with the Federal Government in the enforcement of the "Chinese Immigration Act", at which time enquiries were made of every Chinese resident in Canada.

In 1933 Vital Statistics was made a branch of the Provincial Secretary's Department, under the direct control of the Provincial Health Officer. In the same year certified extracts of the Church Records of Baptism, many of which antedate registration, were made a part of the records of the office of the Registrar of Births, Deaths and Marriages. Solemnization of marriage in British Columbia has always been under the control of the Vital Statistics Branch.

In 1931 a monthly bulletin was commenced under the direction of this division. Articles of interest in epidemiology, vital statistics, public health engineering, etc., are brought to the attention of the profession and to all public health workers. The bulletin is of particular value in issuing instructions to district registrars of vital statistics.

The Registrar of Births, Deaths and Marriages is assisted by a Deputy Registrar, an Inspector of Vital Statistics, and office staff at Victoria; and by ninety-two district registrars and seventeen Indian agents situated at various strategic points throughout the province.

The Value of Accurate Statistics in the Study of Cancer*

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THE control of any disease depends, to some extent at least, upon knowing its cause. Many of our ideas as to the cause of cancer are mere assumptions, for we have not the data upon which to base sound conclusions. We need accurately collected and correlated statistics to furnish us a basis upon which to work. The belief is common to-day that cancer is claiming its victims at progressively younger ages, and various ideas as to the reason for this are put forward. But such a belief is unfounded. In 1901 the average age of death from cancer in Canada was 59 years; in 1921 it was 61.7, and in 1931 it was 61.8, an average higher by almost three years than that of thirty years ago. Nor is the *percentage* of persons under 40 dying of cancer any greater now than formerly. In 1901, 11 per cent of cancer patients died under 40; in 1931, only 7 per cent of cancer patients died under 40. In 1901, 52 per cent of cancer deaths occurred after 60, and in 1931 this figure had risen to 60 per cent. Thus the impression that cancer is claiming its victims at younger ages is not borne out by facts.

If we stop to think, we will see the reason for this. The later the age at which people were destined to develop cancer, the less chance they had of actually becoming a cancer case, for death in some other form was apt to overtake them first. The lower the age of onset, the more likely was the patient to live until he developed cancer. Thus there was a selective action on the part of death which militated against the potential cancer case with a high age of onset from ever becoming included in the cancer lists.

Through the elimination of many diseases, and the lowering of the death rate from many others, we save proportionately more of the older age cancer patients than we do of the younger, with the result that the average age of death from cancer is raised. As long as our public health activities and preventive medicine prolong the lives that formerly were lost, we can expect the average age of death from cancer to rise steadily, but with decreasing acceleration as we near the equilibrium which will come when preventive medicine is unable to find further means of saving life.

The basis for the belief that cancer is attacking the young more frequently now is as follows. In 1931 there were five young cancer patients for every two that were young—that is, under 40—in 1901. But there were *nine* cancer patients who were old—that is, over 60—in 1931 for every two who were old in 1901. Thus in proportion the young cases are much less frequent. As a matter of fact, had cases under 40 been as common in 1931 as they were in 1901, there would have been 1,140 cancer deaths below this age in place of the 712 actually recorded for Canada.

Do Statistics Help in Proving the Role of Chronic Irritation as a Cause?

We have long been told that an injury or chronic irritation can cause

*An address delivered before the London Rotary Club, April 23, 1934.

cancer, and we have come to accept it as a truth that practically all cancer is caused by chronic irritation. Thus we see statements by the profession that uterine cancer could be eradicated if all tears following childbirth were repaired; that lip cancer is due to smoking pipes; that mouth cancer is due to ragged teeth, syphilitic sores, etc. These ideas sound well in theory, but have we actual data which show them to be fact? If they are not fact, our campaigns for cleaning up the mouth and repairing lacerations may be of great help in improving general health, but they will not result in a lowering of the deaths from cancer of the mouth or uterus.

Does pipe-smoking cause cancer of the lip? We cannot answer this question for we have no data on how many pipe smokers did not develop lip cancer and how many non-smokers did. Our chief reason for believing that pipe-smoking was the cause was that far more men developed lip cancer than did women, and that more men smoked pipes. What do the records show? Unfortunately, lip and mouth cancer are not separated in the statistics, but the incidence of this type of cancer among women has increased ten times in the last thirty years. It is true that women smoke more, but not pipes. Unless we revise our ideas and incriminate the tobacco instead of the hot pipe stem, we are put to it for an explanation of the tremendous increase of lip and mouth cancer among women in Canada in the last thirty years.

What are the facts about uterine cancer? There again we have no records as to how many unrepaired lacerations developed into cancer. But we do have a tentative way of checking this conclusion. In 1931, 92.5 per cent of uterine cancer occurred in married women, but of women over forty 90 per cent were married. Therefore uterine carcinoma is not much more frequently found, relatively, in married than in unmarried women. In 1921, 88 per cent of uterine cancer was in married women and 88 per cent of the women over forty were married. Women are having fewer babies now than they had ten years ago, they are receiving better obstetrical care now, but uterine cancer increased among married women 4.5 per cent in the last decade. That was because the number of married women increased. When the percentage of married women rises to 100, then *all* uterine cancer will be found in married women. I am not denying that unrepaired lacerations following childbirth cause uterine cancer. I am saying that we have no data on which to evaluate what role, if any, they play.

One might well argue that the greater the number of babies a woman has, the greater the opportunities for injury and hence for uterine cancer. The women of Quebec have much larger families than have the women of Ontario, ten-children families being four times as common, twelve-children families over six times as common, and fifteen-children families eight times as common in Quebec as in Ontario. The statistics do not reveal the number of lacerations in the two provinces, but infant mortality is a sensitive index of the amount of pre- and post-natal care of mothers. The infant mortality rate in Quebec is 70 per cent higher than in Ontario. Hence we should expect the death rate from uterine cancer to be much higher in Quebec; but, as a matter of fact, of women over forty dying in the two provinces, 3.1 per cent died of uterine cancer in Quebec and 3.3 per cent in Ontario.

These figures do not disprove that injuries received at childbirth are the

cause of uterine cancer; on the other hand, they certainly do not lend any support for this contention. What we need to know further are the following facts: of women who died of cervical cancer, how many had children; how many children each had; the age of onset of the cancer; if other women in the family had had cervical cancer; if these women had had lacerations, and if so had they been repaired; if the percentage of uterine cancers rises among women as the number of children in the family is greater; and if there is any correlation between high birth weights of the children and uterine cancer. Not only do we want to know this for the women who had uterine cancer, but for the women who died at corresponding ages, with corresponding numbers of children, and with no uterine cancer. Until we have these facts and correlate them we are merely guessing at the role of lacerations in the production of uterine carcinoma. This instance has been selected inasmuch as it is one in which statistics may be of use in attempting to solve the cause of the disease.

THE NEED FOR A STATISTICAL BUREAU OF CANCER RESEARCH

We have an excellent system of vital statistics in Canada for what they were designed to do, namely, record the cause of death, the sex and the age of the patient. They were not designed to find out the cause of disease or the contributing factors in its production. If there were a statistical bureau devoted to cancer research, this valuable information would be collected and saved, and correlated in a manner designed to settle certain research problems. Such information could be collected without a great deal of labour on the part of the physician, as the average doctor gets only three cancer cases a year. Some of the information would be collected from the family, and such records would be taken not only when a death from cancer occurred but also when an operation occurred. Those cancer diagnoses which had been confirmed by operation or autopsy and a pathologist's report would be treated separately from those in which the diagnosis was unconfirmed. Family records would be gathered in one place, available for statistical knowledge, instead of being scattered as at present in the physician's notes or on hospital records.

Heredity as a Factor in Cancer

Perhaps it would be in the field of inheritance that most information would be collected. Many physicians do not believe in inheritance of tumors because they feel there is so little evidence for it. Only a small part of the hereditary records are ever published because the physician is too busy curing people to write about his patients, unless he thinks the case is unusual. Another reason why physicians do not always appreciate the significance of inheritance is because the different members of a family may go to different doctors and each one has rather a piecemeal view of the family. In one instance I know of, five different surgeons operated upon three members of one family for five different tumors. Even if the family history was carefully collected in each of these instances, only the fifth surgeon would know the whole story.

The knowledge that cancer is inherited will be made convincing to the general practitioner only when such a mass of data has been collected. Such knowledge would be beneficial, as two illustrations will show. A man of 52

was operated upon for stomach cancer. A week later his 54-year-old brother came to the same surgeon with exactly the same type of tumor in the same region. There was a third brother of 50. The surgeon wrote me that he was going to examine the third brother every six months for stomach cancer, and if the brother should get it the surgeon would find it at the earliest possible moment.

An English surgeon had a patient in whose family several members had died of rectal cancer. He examined her, although she had no symptoms, found the polyps which are so often the forerunners of rectal cancer, removed them, and with them the site of the cancer which she would have had later on. Thus heredity in tumors recognized by these two surgeons acted as a source of prevention.

We are told that cancer is so common that two members of a family are apt to get cancer just on the basis of chance. If this were true, husband and wife should get the same kind of tumor as frequently as parent and child or brothers and sisters. Husband and wife are two members of a family and they do not complicate the problem by being related. In a series of stomach cancer cases I found that related persons in the family were affected *ten times* as frequently as unrelated persons, namely, husband and wife. Thus related persons get stomach cancer ten times as often as they should on the basis of chance. Such studies can be made only on groups of cases, no one physician having enough data of his own for such a piece of research, unless he be connected with a large cancer clinic.

Many people do not want to believe in the inheritance of cancer. They feel that if someone in their family has died of it they are doomed to die of cancer. Far from it. Just because one person in a family has blue eyes does not mean that every child in the family must have blue eyes. Inheritance in cancer means just this: if any person has died of cancer the other members of the family are more apt to get that type of cancer and at about the same age than they are to get any other type of cancer. They may not get cancer at all. This is not a pessimistic outlook, certainly not more so than the fact which we must accept, namely, that of those of us over forty, one in every seven will die of cancer. It is really a helpful outlook, for it warns of the kind of cancer for which we should most be on the watch. We cannot be examined yearly for the hundred different types of cancer but we can be examined for the type which seems to be affecting the members of our family.

Collection of Other Important Data

Such a statistical bureau as I have in mind would collect other information. We could study whether any particular form of cancer was increasing faster than others, and, if so, what were the significant changes in the environment or in diagnostic methods to account for this increase. Records would be kept of the increase in cases which came to autopsy or which were confirmed by a pathologist's report. This would give a fair index of how much of the cancer increase was to be attributed to increased facilities for diagnosis.

Data on a large scale would be collected relating to occupation, to exposure to carcinogenic agents, to time of exposure necessary to induce cancer, and time between exposure and tumor necessary to elapse before one could

accurately state that any particular tumour was to be attributed to occupational damage. It will not be long before workmen's compensation boards will be seeking for redress for cancer due to occupational injury. We have little or no information of this type that is based upon accurate data.

Many of the questions which we want answered are never asked of cancer patients, or at least not recorded, even on hospital records. Even if they were, the answers are useless because they are not collected in a uniform manner and are not available for research. If this information was collected and correlated for all cancer cases, by such a central research bureau of cancer statistics, we would have an incalculable wealth of knowledge.

I cannot close without this word. Cancer has been increasing, and we view its increase with alarm. Here is where a statistical study offers us a sound philosophy. It shows us that the reason more persons are dying of cancer is because fewer are dying from infectious diseases. We have to die of something, hence as our public health activities save us from dying of typhoid, smallpox, cholera, etc., they save us to die of something else. At present that something else is proving to be either cancer, cardio-vascular renal disease, or diabetes. We cannot expect the deaths from all diseases to fall; as some fall, others must rise. We have fought numerous battles with death on many fronts, and have won signal victories. Eighty-five years ago one out of every four Irish immigrants who came to Canada died of cholera; to-day we do not know it as a cause of death in Canada. We have so far eliminated smallpox as a cause of death that, from killing whole villages, we now have but three deaths among a population of over 10 millions, in 1931. We have defeated death on a dozen fronts, we have pushed him back from trench to trench; but we have tended to forget that the ultimate victory is his; that if we thrust him back to the last line of defence he still wins, for that last trench must of necessity remain unassailable. The more we conquer infectious diseases, the higher will go the death rate from cancer. If we were suddenly to discover a guaranteed cure for all cancer to-morrow, we would find that at the end of the year the death rate from diabetes and cardio-vascular renal diseases would have risen.

I am sympathetic with all the work that is being done for the prevention or for the early diagnosis and cure of cancer; especially for the sake of those who are dying from it while still active and able to carry on we must do all in our power to find its cause and its cure. But I do feel that we should not be too discouraged over the rising death rate from cancer, for it is an index of how many persons we have prevented from dying of other diseases years before. There is one thing that may lower the death rate from cancer in the near future. If we continue to indulge in our present flair for speedier motor cars, we will find the death rate from cancer falling, for we will have buried many of its potential victims years before as a result of automobile accidents.

Collection of adequate statistics concerning cancer may not show us the cause of cancer; it may help us to evaluate the evidence which we have accepted as irrefutable for our present day ideas as to the cause. Experimental work and clinical work in the study of cancer are being well carried out. It is time that the statistical aspect of cancer research should receive adequate support.

Slaughter-Houses and Their Evils

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THE slaughter of animals for food in this country is carried out by (1) wholesale establishments, (2) small butchers, and (3) individual farmers. Only the first of these, establishments where meat products are prepared for export or for interprovincial trade, are under the direct supervision and inspection service of the Health of Animals Branch of the Federal Department of Agriculture. The slaughter-houses of the small butcher and the farmer are not subject to such inspection and it is to these that attention should therefore be directed.

Slaughter-houses where animals are killed for local consumption are usually found in isolated locations about the city or town, either on a back street surrounded by stables or dwelling houses, or outside of the corporate limits, each butcher apparently trying to avoid observation. In many instances the slaughter-houses are located on the banks of streams or creeks and the drainage is toward such streams. Frequently the offal is thrown on the banks to decay or to be devoured by dogs, swine, rats and other vermin.

Such places, therefore, in addition to being unsightly, malodorous and extremely insanitary, are actually centres for the spread of disease through the consumption by the animals named of the raw offal recently removed from the carcasses of animals infected and, it may be, harbouring parasitic cysts.

That the conditions which obtain at a very large number of these local slaughter-houses need attention from authorities competent to deal with the situation is only too apparent to those who have had to visit them. These conditions are well described in extracts from the report of an investigating committee who inspected a number of such plants some years ago.

"At nearly all slaughter-houses visited, foul, nauseating odours permeated the air for a considerable distance around. Countless flies swarmed in and around the buildings, literally covering the carcasses which hung up to cool. Beneath the houses was a thin mud or a mixture of blood and earth, churned by swine which are kept to feed upon offal. Maggots frequently existed in numbers so great as to cause a visible movement of the mud. Water for washing the meat was frequently drawn from dug wells which received seepage from the slaughter-house yards, or the water was taken from the adjoining streams to which the hogs had access. Dilapidated buildings were the usual finding, and always the most repulsive surroundings and odours existed. Slaughter-houses of fair sanitary condition were *not* found. They were all awfully and abominably bad or else met the standard completely."

Two concrete examples of conditions as they existed a few years ago in two large slaughter-houses located in an eastern city where no inspection was in force, and which still exist in the majority of slaughter-houses not under control or supervision, may serve to impress further upon those who have not actually come in contact with these conditions the crying need for rectification. The description of one of these places is as follows:

"The several departments of the establishment are each in a separate building. The killing department, for example, is in a large barn-like wooden structure. It has one floor and a basement. Cattle, sheep and calves are killed in the basement and on the first floor. The basement is floored with cement but the flooring in the room above is of wood, filthy and insanitary. When slaughtering is being done, heads and hides are piled in heaps on the floor, and livers and tails are scattered about. Butchers frequently hold their knives in their mouths, wear grimy clothes, spit on the floor and wash down carcasses with filthy water carried about in a bucket. The ceilings, walls and pillars are exceptionally dirty, blood and fecal matter besmattering everything. The trucks, trays and other receptacles are filthy, as are the tables on which gut is removed. Chutes and cutting blocks also are dirty and no effort is ever made to clean them. No toilet room is provided in the building. The coolers are in a revolting condition. The top is filled with cast-off, filthy shoes and clothes, hides and cans, and other refuse. The floors are wet and dirty, the walls damp. Livers are thrown on the floor and foul-smelling barrels are allowed to stand on the killing floor. The pens are in an inconceivably filthy condition. Old clothing, reeking with filth, is allowed to hang on the walls of the building."

At another plant having no inspection the following conditions were found:

"The place was constructed many years ago and is falling to pieces, with little attempt being made to repair it. This slaughter-house is composed of three rooms, each about twenty feet square, only partly partitioned off. One of the compartments is used for the killing and dressing of hogs, one for lard-making, and the third as a storeroom for manufactured lard, utensils, boxes, barrels, etc. The gut-cleaning is done in the lard room. Steam from the scalding tub and the foul odour always more or less present in hog-killing rooms come in direct contact with the lard in all stages of its manufacture, and with the finished product. All floors are of wood and in a shocking condition. The place is supplied with running water but the floors, walls, ceiling, tables, benches, etc., show but little evidence of its use. The loose material is swept from the floors but the rest remains. Blood and manure are caked on the woodwork in places one inch thick. The blood and offal are conveyed by pipes and trap-doors to tanks in the basement and from there taken to the rendering works. The cellar has a cement floor but it is maintained in a filthy condition. There is no toilet, urinal or closet connected with the place. Livers when first removed from the carcass are thrown on the filthy floor and later hung on equally dirty racks in the slaughtering room, exposed to flies, filth and the stench of the place. The yards, pens and runways are seldom cleaned, never during the winter months."

While these observations were made some years ago, and there has been improvement in the meantime, there is no doubt that they could be duplicated to-day in some quarters. They are given here in all their gruesomeness in order to indicate something of the problem of slaughter-houses and to show the necessity for supervision. The location, construction, equipment and method of operation of slaughter-houses should receive the attention of the public health official.

The Value of Concentration

It is impossible to effect an efficient and satisfactory system of meat inspection and slaughter-house control in this country without greatly increasing the number of inspectors or concentrating the slaughtering. It is the multiplicity of slaughter-houses that has prevented satisfactory inspection. Concentration is supported by experience in other countries. Besides facilitating inspection and control, it has other advantages such as elimination of

the smaller sources of trouble with their attendant nuisances, reducing costs, allowing the use of by-products, etc. Such concentration may be municipal or co-operative in character. Both have proved feasible. If cities, towns and smaller communities which are not prepared to adopt municipal ownership and control of slaughter-houses would at least require their segregation under competent supervision, a great step towards solving this problem would be made.

THE REQUISITES OF GOOD SLAUGHTER-HOUSES

The requisites of a good slaughter-house may be considered under the following headings: Location and Water Supply, Plan, Construction and Materials, Equipment, Plumbing and Drainage.

Location and Water Supply

The slaughter-house should be located on a site that permits adequate drainage and allows an abundant supply of sunlight on one aspect at least. A good supply of water is essential so that strict cleanliness may be maintained and proper means for the removal of waste secured.

Plan

Adequate light and ventilation, both natural and, when necessary, artificial, must be provided for all parts of the building. The building should be so divided that the finished products are handled in a room entirely separate from that in which the killing, bleeding, skinning and dressing are done. There should be no trucking or otherwise conveying any of the non-edible products of the carcass through or into the rooms where edible meat is handled, nor should any of the edible portions be stored in rooms containing non-edible products. The construction should be such that odours will not penetrate adjoining rooms.

Construction and Materials

The materials used should be, as far as practicable, of an impervious nature with smooth surface. Concrete, cement and plaster do not present a sanitary surface unless they are treated with oil paints or some similar substance. All wood and bricks should be painted, or the bricks have an enamelled surface. Since rats, flies and other vermin are sources of filth and frequently transmit disease, they should be most rigidly excluded from all parts of a slaughter-house. Rat-proof construction should be employed in building new plants. As is generally known, rats will burrow in the walls and floors of slaughter-houses and are usually found in large numbers beneath the floors of cattle-pens, alleyways, sheds and platforms, particularly if the floors are of wood laid directly upon the ground. Whenever possible, wooden floors should be replaced by brick or block pavements laid on cement, or by concrete construction. Platforms should be open in front and paved below. The walls of chill rooms, both outer and inner, should be of rat-proof material. All sewer openings,

air flues, and windows through which rats or other vermin might enter should be screened. All doors and windows and other openings through which flies or dust may gain access should also be adequately screened.

Floors

Floors must be of nonabsorbent material; this is especially important where, during the time of operation, there is to be a continual flow of water on them. Needless to say, adequate surface drainage must be provided. Asphalt of the proper degree of hardness is a most satisfactory floor. When a floor can be constructed on a solid foundation, such as in the basement, concrete may be used. The disadvantage of a cement floor is chiefly that the surface soon wears under continuous friction, and as the tensile strength is not great the floor may soon crack. This is especially true when a concrete floor is constructed over wood. Cracks cannot be filled with cement with an assurance that the floor will be watertight. The wearing surface of a concrete floor is much improved when a granolithic finish is used. Brick floors are not to be recommended as brick is too absorbent and the floors are uneven, with numerous joints. Bricks of uneven hardness of burning generally require frequent replacing. Wooden floors are not satisfactory because of their comparatively short life, liability to splinter and difficulty of cleaning and maintaining in a sanitary state. In all floors the gutters should be of metal, or formed in the concrete or asphalt.

Toilet and Dressing Rooms

Toilets should be conveniently located and adequate in number. The fixtures in the toilet rooms should be simple in character and of such material as may be readily kept clean. Automatic fixtures are to be preferred and ample water supplies for flushing closets and urinals must be provided. Water basins and sinks should be adjacent to the toilets and notices should be posted at appropriate spots, instructing employees in the washing of hands before commencing work and after visiting the toilet.

The rooms used as dressing rooms and for holding wearing apparel of employees should be thoroughly lighted and ventilated, and when necessary should be fumigated. Clothes lockers of metal are best and should be thoroughly ventilated.

Equipment

All equipment should be of a sanitary character and all machinery, tables, benches, etc., should be so constructed and located that all parts may be readily cleaned.

Plumbing and Drainage

Floors must be properly drained by the use of gutters or other effective means to remove the waste water incident to the processes of preparing the products and from cleaning and washing the rooms and equipment. The

floors should slope to the floor drain, which must be provided with a suitable trap. The bell trap, when given proper attention, is efficient, but because of the ease with which this trap is rendered inefficient its use is not recommended.

Blood and other waste material must not be permitted to flow directly into the drain, but to a suitable catch basin. When the floor drainage is emptied into a catch basin, the lowest end of the drain should be entirely submerged in water, so as to make a water seal to prevent the gases from the catch basin permeating the various rooms by way of the drain. Catch basins and skinning tanks should be located entirely outside of any rooms where meat foods are prepared or stored. There are various types of catch basins designed to prevent any blood or killing-floor material gaining access to the drain beyond. Should the slaughter-house exist where a sewer system is available for connections, the ordinary disposal of liquids is a simple matter, but where there are no sewers it is quite a different matter and calls for study. When planning the drainage, two systems have actually to be provided for, one to carry off the blood or liquids from the killing floor, the other to serve the remainder of the building.

Septic Tank for Disposal of Liquid Wastes

Where sewers are not available, all waste liquids and material from the drains should be carried to and disposed of by means of a septic tank. This tank should be constructed of concrete, with outer walls eight inches thick, and the wall between the two chambers and the floor and covering of the tank six inches thick. The tank may be placed very close to the slaughter-house, a foot or two intervening between the foundation and the wall of the tank. It is composed of two chambers.

The first or "septic" or "cultivating" chamber should be large enough to hold at least the largest amount of waste water and sewage which could be discharged during any twenty-four hours. It is advisable that the tank be built as long as possible, so that any suspended matter will either float or be precipitated in its passage from the first chamber inlet to the outlet to the second chamber, but depth should not be sacrificed to accomplish this.

The size of the second or effluent chamber will largely depend upon the nature of the ground in which the irrigation or disposal bed is to be placed. Should the bed be in ground which is very porous, such as sand, gravel or very loose earth, it could be built to hold one-half the capacity of the first chamber. In this case the tank would discharge every 12 hours, and if the chambers were of equal size the discharge would take place every 24 hours. A suitable syphon arrangement should be provided for intermittent discharge.

The Irrigation Bed

Care must be exercised in constructing the irrigation bed. Trenches must be dug, and if the ground is not porous a bed of gravel or cinders should be placed under weeping tile. The depth of gravel or cinders will depend

upon the nature of the ground, and if very hard clay is met with it may be necessary to under-drain this bed with a second line of weeping tile. The number or total length of weepers contained in the bed must be estimated from the number of gallons of effluent to be discharged in it. Two four-inch weeping tiles should be allowed for each gallon discharged. The tiles should not be lower than twelve to fifteen inches below ground surface over which no trucks nor other heavy vehicles should pass. Should the building be in a hollow or on very low ground, it might be advisable to provide a pump or ejectory in the second chamber of the septic tank to force the effluent up to a distributing tank, placed at a higher level and perhaps on more suitable ground.

In no case must the discharge from either tank be permitted to drain into any creek or other water course; neither should it be discharged into an old or unused well. Such practice is strictly contrary to the terms of our Provincial Health Act.

Disposal of Offal

All offal—intestines and contents and other inedible portions of the carcass—must be handled in such a way as to cause no nuisance. As soon as removed from the carcass these parts must be taken from the killing floor to a place provided for the purpose. Whence this material is taken from there, or how treated, will depend upon what facilities are offered. Where it is possible to transport it to some plant equipped to handle such by-products it is of some value. Otherwise it is practically an entire loss. Its removal from the vicinity of the slaughter-house while still fresh is important. The receptacles in which the offal is kept or transported must be of impervious material and kept strictly clean. Where there is no other means of disposal of offal, it may be properly buried or incinerated. However disposed of, it should be under the supervision of the local authority.

In conclusion, it should be pointed out that the operation of a slaughter-house comes under the heading of "Offensive Trades" in the Public Health Act and cannot be engaged in without the consent of the Local Board of Health or of the Municipal Council.

Survey of Health Habits Among School Age Children

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WHILE it has been possible, from time to time, to obtain a measure of information as to the amount of so-called health knowledge that children acquire in school, it has been difficult to ascertain to what extent this knowledge has been transposed into action.

In the hope of being able to get some idea of the extent to which certain desirable health habits have been consistently practised by children of school age, a survey of six grades in the public schools of a city in Ontario was undertaken.

Plan of Survey

In this survey 2,050 children took part. The age group was from eight years in Grade 2 to sixteen years in Grade 8. The majority ranged between the ages of nine and fourteen years. Each child was supplied with a form upon which he was asked to write answers to certain questions. The teacher was made sufficiently familiar with the desire of the survey party to be in a position to assist the younger children in answering. It is presumed that the answers are as correct as it is possible to obtain from children under such circumstances. The information obtained has been compiled under appropriate headings and is presented merely for the consideration of those public health workers and educational authorities who are interested in a study of this type. Consideration is given to the possible relationship between economic and social conditions and health conduct and any variation with regard to sex. The findings of the survey in relation to the health attributes studied are outlined, appropriate tables and diagrams being presented to enable ready comparison.

Sleeping Habits

Table I presents the findings in relation to sleeping habits.

TABLE I

SLEEPING HABITS OF 2,050 SCHOOL AGE CHILDREN

Sleeping Habits	Percentage of Specified Group with the Particular Attribute						
	Whole Group	Girls	Boys	III Grade	VIII Grade	Poorer District	Better District
Going to bed before 9 p.m....	47	42	52	81	13	47	38
Asleep within 15 minutes.....	77	82	72	73	77	77	77
Sleeping with windows open..	72	75	69	62	81	71	72
Early risers.....	69	68	70	59	79	77	77
Waking without being called..	73	71	74	73	73	61	73

It is seen that less than half of the children went to bed before 9 p.m. and in this respect boys were distinctly better than girls. As we would expect, the junior grades showed the greatest proportion going early to bed and Grade VIII the smallest. Socio-economic difference is apparent in that fewer children from better districts went to bed before 9 p.m.

In reference to wakefulness, three-quarters of the children went to sleep within fifteen minutes after going to bed, the percentage of girls being definitely higher.

In spite of years of educational effort, one-quarter of the children still sleep with their bedroom window closed. This condition is particularly pronounced in the junior group (Grade III), where more than one-third of all children in the group slept with windows closed. Socio-economic variations were slight.

Late rising was an attribute of one-third of the children. Sex and social variations were negligible. Here again Grade III findings were of interest, for two-fifths were late risers. Over one-quarter of the children reported having to be called in the morning. This habit is definitely more marked in poorer than in better districts. Sex and grade differences do not appear to be of significance.

Breakfast Habits

The importance of adequate nutrition in school age children cannot be gainsaid. The survey findings are therefore of fundamental concern. The study of the breakfast habits of the children is given first in table II and special points of interest are illustrated in figure I.

TABLE II

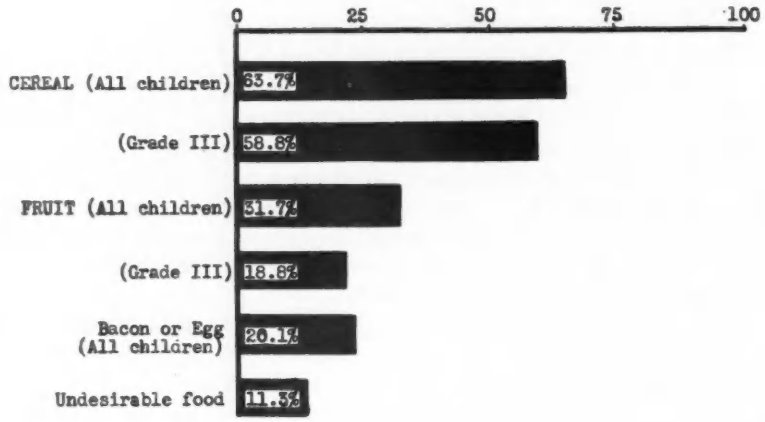
BREAKFAST HABITS AMONG SCHOOL AGE CHILDREN

Breakfast Habits	Percentage of Specified Group with Particular Breakfast Routine						
	Whole Group	Girls	Boys	Grade III or lower	Grades VII, VIII or higher	Poorer Districts	Better Districts
Cereal (Hot or Cold)	64	59	69	59	..	..	..
Milk or Cocoa	64	66	61	70 (Girls)	54 (VII)	59	66
Fruit	32	35	28	19	42 (VII)	29	42
Bacon or Eggs	20	..	..	17 (lower)	25 (higher)	17	24
Tea or Coffee	23	20	25	14	36 (VII) (Boys)	15	30
Undesirable Food	11	15	8	..	6 (VII) 31 (VIII) (Girls)	About same	
No Breakfast	1	2	1	..	4 (Girls)	..	..

In over one-third of the children a cereal was omitted from their breakfast menu. Over two-fifths of the girls did not take a cereal at breakfast and the

FIGURE I.

BREAKFAST HABITS OF SCHOOL AGE CHILDREN



youngest of the surveyed groups (Grade III) ranked lowest of all the grades, with 41 per cent not taking cereal. Two-thirds of the children had either milk or cocoa for breakfast. The differences in the two economic groups are of interest but are not as marked as perhaps one might expect.

Less than one-third of the children ate fruit for breakfast. Grade III again ranked lowest in this respect, less than one-fifth of them having fruit at the morning meal.

A surprisingly low proportion of the children had eggs or bacon for breakfast, only one-fifth of the children having either. The reason for this is not to be found in relation to economic status since even the group from the better districts shows less than one-quarter taking egg or bacon. The reason probably lies largely in poor management at home, poor dietary training and the usual bustle in the morning to get the children off to school. More children had tea or coffee at breakfast than eggs or bacon, even 14 per cent of Grade III children taking one or the other. Over twice as many children from the better districts took these beverages in the morning as children from the poorer districts.

Of the whole group, 11 per cent ate undesirable food, girls in this respect being offenders twice as often as boys. Girls of Grade VIII had the worst record of any group, 31 per cent of them taking what is considered undesirable food. The lowest rating was Grade VII with 6 per cent, while the highest figure for boys by grade was 11 per cent in Grade VI.

Few children went to school without eating breakfast, but in this regard girls offended three times as frequently as boys. The girls of Grade VII had the worst record, 4 per cent going to school without breakfast.

(3) *The Use of Milk, Tea and Coffee*

The habits of the children as to the taking of milk as opposed to tea or coffee at any time during the day were reported as follows:

TABLE III

MILK, TEA OR COFFEE DRINKING HABITS OF CHILDREN

Beverage taken	Per cent of Specified Group taking Beverage Indicated						
	Whole Group	Girls	Boys	Junior Grade (III)	Senior Grades	Poorer Districts	Better Districts
Milk—none	21	23	18	18	.....	28	14
—one glass	18	..	..	..	25 (VII & VIII)	..	..
—two glasses	21	..	..	..	22 (VII & VIII)	..	..
—three or more glasses	40	..	..	27	32 (VII & VIII)	29	52
Tea or Coffee—							
none	57	55	58	75	44 (VIII)	52	62
one cup	19	..	..	..	23 (VIII, Girls)	..	..
two cups	12	..	..	8	17 (VIII)	..	..
three or more cups	12	..	..	8	22 (VIII, Boys)	..	..

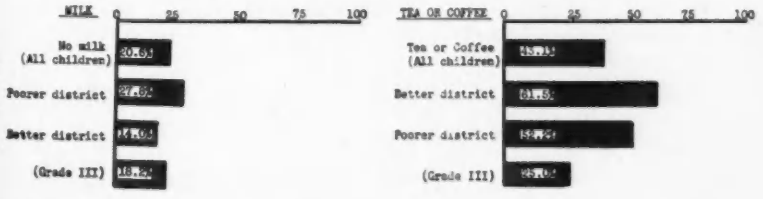
One in every five school children took no milk at all and even in Grade III over 18 per cent drank no milk. About half of Grade III children, however (47 per cent), had 3 glasses of milk or more, which is seven per cent above the average of the whole group. While sex variations were not marked, the girls were apparently poorer milk drinkers than boys. Socio-economic differences are marked, about twice the proportion of children from the poorer districts drinking no milk. Besides this, over half the children from the better districts drank 3 or more glasses of milk a day, whereas less than one-third of the children from the poorer districts did so.

Tea and coffee drinking were all too common, 43 per cent of all children, one-quarter of Grade III pupils and over half of Grade VIII pupils drinking one or the other. The proportion of tea and coffee drinkers was definitely greater among children in the poorer districts.

The more striking of this material is illustrated in figure II.

FIGURE II.

BEVERAGE HABITS OF SCHOOL AGE CHILDREN



(4) *Lunch Habits*

Table IV records the data in relation to the luncheons of the children.

TABLE IV

LUNCH HABITS OF SCHOOL CHILDREN

Lunch Habits	Percentage of Specific Group Having Each Class of Lunch						
	Whole Group	Girls	Boys	Grade III	Grade VII	Poorer Districts	Better Districts
Adequate Lunch	38	40	37	23	54	34	43
Fair Lunch	47	..	..	54	50 (Boys) (Grade VII)		
Poor Lunch	15	12	18	18 (Girls)	7	24	11

Less than two-fifths of all the children had what was considered an adequate lunch and 15 per cent were considered to have a definitely poor lunch. The socio-economic factor is operative here, ten per cent more of the children from the better districts having an adequate lunch and fewer (ten per cent) having a poor lunch. It is to be noted that Grade III again had the poorest record, less than one-quarter of its pupils having an adequate lunch. Grade VII had the best record with over half the pupils having an adequate lunch.

Of the whole group, one child in seven had a poor lunch, boys offending half as frequently again as girls. Thirty per cent of boys in the highest grade (Grade VIII) ate a poor lunch. Second to this group was again Grade III (girls only), 18 per cent having a poor lunch.

(5) *Activities of Children after School Hours*

This subject is of especial interest in the field of child hygiene because outdoor activity of one sort or another is of vital importance. The hazard incurred by playing the street is well known and to this end the following facts are presented.

TABLE V

ACTIVITIES OF SCHOOL AGE CHILDREN AFTER SCHOOL HOURS

Activity	Per cent of Specified Groups with the Attribute Indicated						
	Whole Group	Girls	Boys	Grade III	Grade VIII	Poorer Districts	Better Districts
Playing Outdoors	90	86	94	96	69 (Girls) 90 (Boys)	81	91
Active Play	86	86	87	85 (Boys)	93 (Boys)	85	88
Streets	34	44	23	29 (Boys) 51 (Girls)	75 (Girls)		
Yards	31	38	24	..	..	35	23
Fields	35	17	52	..	..	24	39
Working after school	1	..	..	..	(Boys) 3%		

Over ninety per cent of the children played outdoors after school. In the

poorer districts ten per cent fewer children played outside. The full explanation for this is not known. Sex differences are not more marked than one might expect. Grade III heads the list, 96 per cent of the youngsters having outdoor play after school. The poorest record, as might have been predicted, came in the case of the Grade VIII girls. On the whole, the proportion which indulged in active play was uniform throughout. Almost an equal proportion of the children played in the streets, yards and fields. Grade III had the highest proportion of children playing in the street (40 per cent). The variations in site of play by sex are no doubt, to some extent at least, related to the type of play in the two sexes (*e.g.*, baseball and football as opposed to skipping, etc.).

The socio-economic variations are interesting. Only a small proportion of the children from the poorer districts play in the fields, obviously because in many instances there are no fields, and, as the streets are dangerous, we find a relatively higher number playing in their own yards (one-third as opposed to one-quarter of the other economic group).

(6) *Bathing Habits*

TABLE VI

BATHING HABITS OF SCHOOL AGE CHILDREN

Bathing Habits	Per cent in Specified Groups with the Particular Attribute						
	Whole Group	Girls	Boys	Grades III & V	Grade VIII	Poorer District	Better District
At least one bath	96	..	..	..	..	..	..
One bath	54	50	57	63 (V)	..	50	50
Two or more	42	47	37	33 (V)	52	32	50
No bath	4	..	..	7 (III)	..	9	1
				(B. 10 G. 4)			

The highest proportion of non-bathers came from Grade III, 7 per cent taking no bath at all and boys being more than twice as frequent as girls in this category. Over half the pupils in Grade VIII had two or more baths per week.

(7) *Brushing Teeth*

Of 2,050 children surveyed, 80 per cent recorded having brushed their teeth at least once during the day, but only 45 per cent brushed them morning and evening (Table VII).

TABLE VII

HABITS OF SCHOOL CHILDREN IN BRUSHING THE TEETH

Brushing the Teeth	Per cent of Specified Groups with the Particular Attribute				
	Whole Group	Girls	Boys	Grade III	Grades VII and VIII
Morning and Evening	45	55	35	40 (B.)	38 (VIII, Boys)
Morning Only	23	..	..	13	64 (VIII, Girls)
Evening Only	13	11	15	..	18 (VII, Boys)
Not at all	20	13	26	30	5 (VII, Girls)

The best record in boys, which was poor, was in Grade III, where two-fifths of the pupils brushed their teeth night and morning. Boys in Grade VIII gave a comparable figure. The distribution by sex is markedly unfavourable to the boys.

One-fifth of the pupils did not brush their teeth at all. The proportion of boys was twice that of girls in this regard and the boys and girls of Grade III had the worst record of all. Thirty per cent of them did not attempt to brush their teeth.

SUMMARY

No deductions are drawn from the findings of the survey. The data are of interest to those concerned in health teaching. Consideration of the findings in different grades presents an interesting study. For example, Grade III is outstanding in having the largest proportion sleeping with windows closed. These pupils rank lowest as a group in the eating of cereals or fruit for breakfast. Grade III had the poorest record in eating an adequate lunch (less than one-quarter), 18 per cent of the girls having what was considered a poor lunch. They had the largest proportion of children playing in the streets. One-fifth took no milk at any time in the day. Grade III also constituted the highest proportion of non-bathers (7 per cent) and ranked lowest in the regular brushing of the teeth.

Further surveys of a similar character might well be conducted in selected centres.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES

MARCH, 1934

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	—	4	4	99	45	24	16	21	1
Scarlet Fever	3	64	34	396	916	91	51	42	571
Measles	6	—	1	571	199	1719	329	4	91
Whooping Cough	—	65	—	694	912	46	82	119	57
German Measles	—	7	—	58	24	1	2	1	5
Mumps	—	6	4	631	1110	36	41	5	303
Smallpox	—	—	—	—	—	—	—	—	1
Cerebrospinal Meningitis	1	1	1	2	6	1	1	1	2
Anterior Poliomyelitis	—	—	—	—	—	—	1	—	2
Typhoid Fever	—	—	10	140	19	5	10	1	6
Trachoma	—	—	—	—	—	1	12	—	33

*Data furnished by the Dominion Bureau of Statistics, Ottawa.

Reports from the Twenty-Third Annual Meeting of the Canadian Public Health Association

Held in Montreal, June 11, 12 and 13, 1934

PART II*

REPORT OF THE COMMITTEE ON THE CERTIFICATION OF SANITARY INSPECTORS

THE sanitary inspector occupies an important place in organized public health work in Canada. In the majority of the provinces every municipality is required to appoint such an inspector. In Ontario, for instance, there are 850 local municipalities and it is required that such an appointment be made in each. In the absence of standards of education and training, many municipalities have appointed unsuitable men and have added to their duties work which was in no way related to their public health responsibilities. Too often there has been no appreciation, on the part of either the municipality or the individual appointed, of the duties of a sanitary inspector. In the larger cities and in the provincial departments of health well trained and qualified inspectors who received their training in Great Britain, holding in many instances a certificate of the Royal Sanitary Institute, have been appointed. A number of sanitary inspectors in Canada have, through the hearty co-operation of the Royal Sanitary Institute, been able to qualify for the certificate of the Institute through the holding of examination boards in Quebec, Manitoba and certain other provinces. The excellent work which many of these inspectors have accomplished has demonstrated the contribution which the well trained sanitary inspector can make to the conduct of an effective local department of health. It is to the credit of these inspectors throughout Canada that they have so successfully maintained their high ideals and service through the organization in 1913 of an association of sanitary inspectors known as the Sanitary Inspectors' Association of Western Canada.

From year to year resolutions have been adopted at the annual meeting of the Sanitary Inspectors' Association and forwarded to the provincial departments of health, emphasizing the place of the sanitary inspector in the modern public health programme and urging the appointment of only those properly qualified. A few years ago the Canadian Public Health Association appointed a committee to study the qualifications and training of sanitary inspectors. Recommendations were made to the Association by the committee, urging that provision be made for the training of such personnel and indicating that this might be accomplished by an extension of the facilities offered by certain local municipalities and by the provincial departments of health. In 1933 the Sanitary Inspectors' Association made application for Dominion incorporation, which application requested authority for the

**The reports of the General Secretary, the Treasurer, the Editorial Board, and the Committee on the Form of the Medical Certificate of Death were published in the July issue of the* JOURNAL, *pages 329-344.*

setting of standards, the providing of training, the holding of examinations, and the issuing of certificates. Certain objections were raised by the Secretary of State which prevented the granting of the charter in its original form. The officers of the Sanitary Inspectors' Association presented the matter to the Canadian Public Health Association and a committee was appointed by the Executive Council to study the subject of training and qualifications. The committee consisted of Dr. J. G. Cunningham, Director of Industrial Hygiene, Department of Health of Ontario; Dr. R. D. Defries, School of Hygiene, University of Toronto; Dr. J. T. Phair, Department of Health of Ontario; and Dr. D. T. Fraser, School of Hygiene, University of Toronto. The committee presented its report to the Executive Council at the Saint John meeting in June, 1933, embodying the findings in the following recommendation:

> "That the Canadian Public Health Association establish a committee to be known as the Committee for the Certification of Sanitary Inspectors; that this Committee should have representatives of the Sanitary Inspectors' Association; that it be empowered to establish educational standards and to appoint boards of examiners who shall conduct examinations and shall recommend to the Canadian Public Health Association as being eligible for certification those candidates who have successfully completed such examinations."

The Council expressed their approval of the steps taken, endorsed the principle, and referred the subject to the Executive Committee of the Association for action. During the summer several conferences were held with representatives of the Sanitary Inspectors' Association and an acceptable plan was evolved. The suggested plan of action was presented to the representatives of the various provinces at the fall meeting of the Dominion Council of Health in Ottawa, when it received the anticipated endorsation.

The application for a Dominion charter was amended and presented, the clauses to which objection had been taken by the Secretary of State being deleted or modified, and on January 3, 1934, a charter was duly granted to the "Canadian Institute of Sanitary Inspectors."

In summarizing, the plan proposes the establishing of standards of education and training of sanitary inspectors, offering to those desiring to obtain a certificate examinations which would be conducted in each province. It is not proposed at present to offer any course of training by correspondence or otherwise, but the committee proposes to prepare a syllabus setting forth the content of knowledge of the various subjects required, which would be a guide to the candidate in preparation for the examinations. Candidates would receive their instruction, as far as possible, by being attached to Provincial Departments of Health, or to suitable municipal departments. Details such as the amount of practical experience required are not included in this report and would be subject to further study by the committee in establishing standards. Examination boards would be established through the co-operation of the Provincial Departments of Health in the various

provinces. Certificates would be issued in the name of the Canadian Public Health Association, with appropriate mention of the relationship of the Canadian Institute of Sanitary Inspectors.

All of which is respectfully submitted.

J. G. CUNNINGHAM, *Chairman.*

REPORT OF THE COMMITTEE ON THE ANNUAL REPORT OF THE MEDICAL OFFICER OF HEALTH

FOLLOWING the presentation of a very interesting paper on the annual report of the medical officer of health by Dr. Defries in Toronto in 1932, a committee was appointed by the annual meeting to study the composition of the annual reports. The committee consisted of Dr. J. W. McIntosh, Vancouver; Dr. R. B. Jenkins, Edmonton; Dr. W. H. Hill, Calgary; Dr. G. M. Little, Red Deer, Alberta; Dr. Arthur Wilson, Saskatoon; Dr. A. J. Douglas, Winnipeg; Dr. E. S. Bolton, Brandon; Dr. J. H. White, Fort William; Dr. F. Adams, Windsor; Dr. T. A. Lomer, Ottawa; Dr. Alphonse Lessard, Quebec; Dr. S. Boucher, Montreal; Dr. C. W. MacMillan, Saint John; Dr. R. D. Defries, Toronto; Dr. D. V. Currey, St. Catharines, Ontario, chairman, and Miss Mary Power, Toronto, secretary.

In considering the scope of the annual reports, it is helpful to consider first the purposes. These may be considered as follows:

(1) To indicate what has been accomplished during the year.
(2) To direct attention to urgent health work which needs to be done, indicating how this may be accomplished by extensions of services, passing of regulations.
(3) To show how the money appropriated has been expended in advancing the health of the community.
(4) The preparation of the report with a definite objective of fostering an intelligent and active interest on the part of the public through the publication of the report in the press and its distribution to interested citizens.

As to the number of reports published by cities in Canada, letters were sent to 67 cities. Thirty-four replied and all but one stated that they prepared an annual report. Twenty-one of these forwarded a copy. Reports were not received from 33 cities.

In considering the reports, it is desirable to divide the cities into two groups according to size, including in Group A cities over 75,000 and in Group B cities of from 10,000 to 75,000 population. From the 9 cities in Group A 8 replies were received; 7 prepare an annual report, while one has a monthly report only. Of these 7 annual reports, 5 are printed and 2 a mimeographed.

Of the 58 cities in Group B, 26 reported that they published an annual report; the remaining 32 did not reply. Two of the 26 reports are printed, 7 are mimeographed, and 17 are typewritten.

(1) *Statement of the Medical Officer*

The committee are agreed that the annual report gives the health officer

the opportunity to present clearly the important health problems of the community, recording the progress and outlining the needs. The committee believes that the replacing of the more or less formal introduction to the report by an intimate and interesting presentation of the local situation and the interpreting of the important features of the year's work constitute the most important finding of the study. In only 15 of the reports was there an introductory statement of any kind by the health officer and in some instances the health officer's remarks followed the presentation of each of the reports of the Department's divisions. Important and interesting statistical data, details of which will be found in the statistical report, can with profit be included in this statement.

(2) *Brief Reports of the Various Divisions*

The presentation on the first page of the report of a concise outline of the divisions of the Department and a summary of the personnel is recommended.

A survey of the 21 reports received indicates the frequency with which the various divisions were included, namely:

Vital Statistics	21
Food Inspection	19
Sanitation	18
Clinics	12
Hospitals	12
Public Health Nursing	6
Laboratories	5
Welfare (Municipal Assistance)	7
Venereal Disease	4
Special Reports in Regard to Immunization	8

In addition to the reports of divisions, a statement of work conducted in co-operation with the department through the provincial or federal department of health should be included.

(a) *Vital Statistics.*—The committee feels that definite recommendations can be made at the present time regarding only the report of vital statistics. The suggested tables (1, 2, 3, 4 and 5) would appear to be a minimum for the majority of municipalities. The use of tables 6, 7, 8, 9 and 10 would depend on the size of the municipality. The committee urges the use of these tables in order that essential data may be readily presented.

In reading the reports of many municipalities, the committee were impressed by the lack of appreciation of what may be considered essential data. There are usually statements as to the number of births, stillbirths, infant deaths and the general death rate, but these are not always presented in a form for ready use. In several reports two or three pages are utilized in presenting the list of deaths in accordance with the International List, which detailed information is of little or no interest. It is desirable that, as far as possible, the statistical data presented be capable of ready comparison with previous years by the inclusion of data for the preceding year at least. As a result of the study the following tables are suggested for consideration.

(i) A summary table of births, deaths, stillbirths and marriages, for the pre-

ceding five years or for several of the preceding years, together with the average of earlier five-year periods, in order to present the background of earlier conditions.

TABLE I

TOTAL BIRTHS, DEATHS, MARRIAGES AND STILLBIRTHS
1928-1932

Year*	Population	BIRTHS		DEATHS		STILLBIRTHS		MARRIAGES	
		No.	Rate per 1,000 Pop'n	No.	Rate per 1,000 Pop'n	No.	Rate per 1,000 Pop'n	No.	Rate per 1,000 Pop'n

*Five-year averages of preceding years may be preferred to the use of immediately preceding years.

(ii) Causes of death.

The use of the abridged International List (1929) containing only 43 rubrics is recommended. From the list there would be omitted in the report those rubrics for which no deaths were reported, presented as in table II.

TABLE II

DEATHS FROM CERTAIN CAUSES SHOWING
RATE PER 100,000 AND PER CENT OF TOTAL DEATHS
1932.

Cause	Number	Rate per 100,000 Pop'n	Per cent of Total Deaths

The arrangement of the causes of death in related groups is of very definite value in showing the public health problem presented by each, *e.g.*

Cause of Death	No. in International List	
Diseases of Heart	90 – 95	
Cancer (all forms)	45 – 53	
Diseases of Arteries	96 – 99	
Tuberculosis (all forms)	23 – 32	
Pneumonia (all forms)	106 – 109	
Nephritis	130 – 132	
Maternal Deaths	140 – 149	
Infant Deaths	.....	
Violent and Accidental Deaths	163 – 198	Class XVII

(iii) Infant Mortality.

TABLE III

INFANT MORTALITY—1928-1932

Year*	Number of Living Births	Number of Deaths Under 1 year	Rate per 1,000 Living Births

*Five-year averages of preceding years may be preferred.

Infant deaths can be presented by specified causes or grouped in such a way as to emphasize the important causes. The giving of comparative data for five years adds to the value of the report.

TABLE IV

INFANT MORTALITY BY CAUSE OF DEATH—1928-1932.

Cause of Death	1932		1931		1930		1929		1928	
	No.	*Rate	No.	*Rate	No.	*Rate	No.	*Rate	No.	*Rate
Diseases of Digestive System....										
Diseases of Respiratory System..										
Prematurity.....										
Congenital Debility.....										
Congenital Malformations.....										
Acute Communicable Diseases, excluding (1) and (2).....										

*Rate per 1,000 live births.

(iv) Maternal Mortality

In large centres of population the causes of maternal deaths may be presented in table form with comparative data for previous years. Attention should be drawn, even in the reports of smaller municipalities, to the occurrence of any such deaths and advantage taken of the opportunity to further the health supervision of expectant mothers by their family physician.

(v) Reportable Diseases

In every report a table presenting the cases and deaths from the more common of these diseases should be included.

There might also be presented to advantage, when timely, an estimate of the cases of disease that had been prevented and lives saved by specific immunization.

TABLE V

REPORTABLE DISEASES

DISEASE	Average		1932		1931		1930		1929		1928	
	Cases	Deaths	C	D	C	D	C	D	C	D	C	D

For larger cities cases might be given by months and possibly by age and sex as suggested in tables IX and X.

ADDITIONAL TABLES FOR LARGER CITIES

The number of tables in the report will vary with the size of the municipality, the organization of the department and the available amount of money which may be spent on printing or mimeographing.

The following tables (headings) are suggested for large centres of population in addition to the tables above mentioned.

TABLE VI

CHIEF CAUSES OF DEATH BY SEX AND AGE—1932

Cause of Death	Under 1		1–4		5–14		15–19		20–49		50–59		60–69		70 +		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F

A table showing the distribution of deaths by age will serve to draw attention to the toll of infant deaths in the first few weeks of life. Expressing each of these groups of causes as a percentage of the total number of infant deaths is most helpful.

TABLE VII

INFANT MORTALITY

BY AGE AT DEATH FOR CERTAIN CAUSES—1932

Cause	Less than 1 day		Less than 1 week		Less than 1 month		1–3 months		4–6 months		7–11 months		Total Deaths Under 1 year
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	

TABLE VIII

MATERNAL MORTALITY BY CAUSE—1928-1932

Cause	1932		1931		1930		1929		1928	
	No.	%	No.	%	No.	%	No.	%	No.	%

TABLE IX

REPORTABLE DISEASES—1932

CASES AND DEATHS BY MONTHS

Disease	Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Total	
	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	C	C	D	C	D

TABLE X

CASES OF REPORTABLE DISEASES BY AGE AND SEX, 1932

Disease	Under 1		1–4		5–9		10–19		15–19		20–29		30		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F

(3) *Financial Statement.*

A partial financial statement was included in less than half of the reports and in the majority of instances the statement did not appear in a form that would permit of comparison of similar services in other communities. As pointed out by Dr. Jenkins, Medical Officer of Health for Edmonton, in a recent study* of health expenditures in cities, there is urgent need of agreement as to the services which can be considered definitely as health activities, with proper placing of expenditures for hospital maintenance, street cleaning, garbage collection and other services which have been included in certain city health budgets. To this end it is hoped that a committee may be appointed to study this subject and report on the preparation of the annual budget of the health department.

RECOMMENDATIONS

After careful study the committee would recommend:

(1) That the annual report of the medical officer contain the following sections:

(a) Statement of the medical officer.

(b) Reports of the divisions of the Department.

(c) Financial statement.

*Canad. Pub. Health J., 25: 120 (March), 1934.

(2) That utilization of the statistical tables suggested in this report as relating to vital statistics would facilitate ready comparison with reports of other municipalities.

(3) That the report be prepared in such a way that it may be read with interest and profit by the citizens of the municipality, thus serving as a valuable means of creating public support for the Department.

(4) That reports be printed, if possible, and distributed among interested citizens, service clubs, etc., and to the medical officers of health of other municipalities requesting them.

(5) That the publication of the report be made within at least six months of the close of the year.

(6) That a committee be appointed to define the activities which may properly be designated as health activities and, with this information, to make recommendations regarding the form of health budgets, with the desire of uniformity.

All of which is respectfully submitted.

D. V. CURREY, *Chairman.*

MISS MARY POWER, *Secretary.*

REPORT OF COMMITTEE ON ADMINISTRATIVE PROCEDURES AND OBJECTIVES IN RURAL AND SMALL URBAN COMMUNITIES

THE nucleus of this Committee was appointed by the Executive Committee in the early winter and while the Committee has little in the way of tangible evidence of its activities to exhibit, considerable preliminary work has been done. It was the original purpose of the Committee to confine its interest to the health activities within the rural and small urban communities, but it may be possible, if time permits, to extend the scope of the study to include the larger centres.

The purpose of the Committee is to study as intimately as possible the general concept of the staff of the local public health organization as to their responsibilities and the attitude of the municipal authorities and the public at large toward the existing service.

Considerable confusion would appear to exist in the minds of those engaged in the public health field, particularly those doing such work on a part-time basis, as to what might be expected to constitute a reasonably effective service within their particular municipality. The attitude of the medical men in the community towards the preventive programme and their place in it would appear to be of sufficient interest to warrant its inclusion in a review of this type. The fact that not only the public at large, but those in positions of authority have varying standards by which they measure the local service, tends to hamper its extension in the direction in which it is suggested by present day health authorities that it might be directed. It is hoped to discover whether the limitations of the present service, if such limitations exist, are due to faulty leadership or the unwillingness of the public to follow.

It is our hope that the findings of those carrying on the survey in Eastern Ontario under the auspices of the Provincial Department of Health, to which study the Association has lent its support, will serve as a basis for a more extended enquiry. If the preliminary report, which will be largely based on observations within Ontario, has, in the estimation of the Executive Committee, sufficient merit, it may be possible to make it applicable to the country as a whole. The difficulty of carrying on such a survey without an investigating staff specifically assigned to the task may be expected to hamper the prompt reporting of the Committee. It is hoped, however, that the previously mentioned preliminary report will be available sometime before the end of the present year.

All of which is respectfully submitted.

J. T. PHAIR, *Chairman.*

REPORT OF THE COMMITTEES OF THE LABORATORY SECTION 1933-1934

IN presenting this report on the activities of the Laboratory Section of the Association the opportunity is afforded to emphasize its main objectives.

The section exists primarily to enable laboratory workers in the field of public health, in which group are included chemists, pathologists and bacteriologists, to exchange ideas. In a country such as Canada it is manifestly impossible to maintain close contact through meetings alone. THE JOURNAL of the Association must be used as a medium of exchange. To that end articles on a great variety of topics appear throughout the year. In addition a mid-winter and a spring meeting are held for the presentation of papers. Another purpose of the section is to sponsor a series of standard laboratory methods. This project appears to the committee charged with initiating the series as one not only of usefulness but of paramount importance to laboratory workers throughout the Dominion. A third objective of the section is to afford, through the medium of THE JOURNAL, the publication of original articles without loss of time and with a minimum of expense.

The mid-winter meeting held at the Royal York Hotel, Toronto, on December 22nd was the outstanding event of the year. More than one hundred members were present. A total of nineteen papers was presented in the two sectional meetings held in the morning. Five demonstrations of great practical interest were given by the Department of Health of Ontario. The length of the programme necessitated a division of subject, one morning session being primarily of medical interest, the other devoted to the bacteriology of milk, food and water. At the general session, held in the afternoon, Surgeon J. P. Leake, of the United States Public Health Service, addressed the section on the subject of the epidemic of encephalitis at St. Louis.

A directory of laboratory workers comprising chemists engaged in public health activities, bacteriologists and pathologists is being compiled. In this list the nature of the work or problems engaged in is specified. A copy of the names on this register will be forwarded to the members of the section.

The Committee on Standard Methods, which consists of Mr. N. J. Howard, Toronto, chairman, Dr. D. T. Fraser, Toronto, Dr. A. J. Slack, London, Dr. A. L. McNabb, Toronto, and Mr. M. H. McCrady, Montreal, reports that much material is already in hand. "Interpretation of Water Analyses", a fifty-page manuscript dealing with the chemical aspects and compiled by Dr. A. E. Berry, is completed and ready for press. The counterpart—namely, the bacteriological aspects—is planned, under the direction of Mr. Howard. Publication of new recommended laboratory procedures, including the use of a dark field outfit for suspected syphilis, cultural media for the isolation of the tubercle bacillus, the diphtheria virulence test, use of tellurite blood agar, complement fixation in the diagnosis of smallpox, will be undertaken, perhaps in reprint form. The early publication of these laboratory procedures will make this material readily available to workers throughout the Dominion.

The Committee of Publications, appointed at the Christmas meeting and consisting of Dr. A. J. Slack, London, chairman, Dr. James Craigie, Toronto, and Dr. Wm. D. Hay, Kingston, has been of very definite asistance to the Editorial Board this year in reading and offering recommendations respecting papers in the laboratory field.

All of which is respectfully submitted.

J. H. ORR, *Secretary.* M. H. BROWN, *Chairman.*

THIRD REPORT OF THE COMMITTEE ON NON-RESIDENT BIRTHS AND DEATHS

THE committee on Non-resident Births and Deaths was appointed in 1931 at the Regina meeting. A conference was held at Montreal on April 8th, 1932, at which all members of this committee were present. After reviewing a considerable amount of material assembled by the chairman covering details in connection with the practice of allocating births and deaths by residence in other countries, the unanimous opinion was reached that vital statistics compiled on the basis of residence was most desirable in Canada, and that a sufficient degree of accuracy might be obtained through further coöperation between existing bureaux. The committee felt that definitions and rulings essential to a system of allocation should be drawn up by the Dominion Bureau of Statistics, and that the responsibility for administration in effecting an interchange of essential facts should rest with each province. These decisions were presented in the form of recommendations at the Toronto meeting in 1932; they were adopted and a copy of the committee report was forwarded to the Dominion Bureau of Statistics for consideration.

The report was very favourably received and special work on the classification of births and deaths by residence was undertaken by the Bureau. The committee awaited with interest a statement covering this work which was

received from Mr. E. S. Macphail and presented to the Section at Saint John a year ago. At this time the committee reported the progress made by the Dominion Bureau of Statistics and pointed out that following the completion of this work the Bureau would be in a position to enumerate the difficulties encountered in allocation, to indicate to individual provinces the weaknesses, if any, in statements of residence, together with any other features essential to an effective interchange of certificates. Moreover, this investigation would show further the effect of residence on local rates, and assist the Bureau in drawing up official rulings and definitions.

Your committee is in a position this year to report further progress made by the Dominion Bureau in connection with the special investigation covering the years 1930-32 referred to above. In a communication dated May 17th, 1934, addressed to the chairman, Mr. Macphail, Chief of the Division of Census and Vital Statistics, Ottawa, states that: "All of the primary work of this investigation is finished and we are well forward with the task of computing, not merely crude, but also standardized rates. As you are aware, reports covering the deaths of 1930 and 1931 have already been issued, but the final report on deaths will comprise the results for the three years and include the standardized rates mentioned above, compiled by the indirect method. In addition to the total mortality, tuberculosis deaths have been treated separately and a report covering this cause will also be issued. These reports may be expected, including one on births, in the course of the next few months."

Mr. Macphail has again pointed out the unreliability of the statement of residence for small towns, particularly in view of the tendency of rural residents in many cases to give post office addresses in place of actual residence. For larger cities the Bureau was assisted in this investigation by means of street indexes constructed for this purpose.

In order to obtain greater accuracy and to estimate the extent of incorrect description of residence, the Bureau has been returning all certificates which appeared doubtful in this respect, since the beginning of the current year.

Mr. Macphail's report includes a table which is of considerable interest to our committee, and which shows for cities of 10,000 population and over the distribution of the deaths of their residents for the year 1930.

The figures for the city of Toronto will serve as a specific example. The report shows that 6653 deaths occurred among Toronto residents; of this number 6255 died within the city, 8 in other cities of 100,000 population and over, 5 in cities of 40,000 to 100,000, 26 in cities of 10,000 to 40,000, 13 in cities and towns of 5,000 to 10,000, and 331 in other parts of the province, that is, either in towns of less than 5,000, villages or rural parts. Fifteen deaths among residents of Toronto occurred in other provinces, exclusive of Ontario.

In the given illustration, the 331 deaths specified as taking place in towns of less than 5,000, villages or rural parts, account for nearly 85 per cent of the residents whose deaths took place outside Toronto. From experience it may be assumed that a very large proportion of this number occurred in the metropolitan area of these cities. The report shows that for all cities of

100,000 population and over the percentage in this class is nearly 60 per cent. Since a very small number of these resident deaths are extra-provincial, and the majority are those taking place in metropolitan areas, it would therefore appear that the individual provincial bureaux could handle the problem of reallocation with almost complete success.

The committee feels that it is important to keep in mind that the ultimate value of reallocation of births and deaths by place of residence pertains essentially to municipalities, especially those with organized health departments, to whom current specific mortality rates for residents are important.

In the light of this fact the element of time must, the committee feels, be a definite consideration in outlining plans for future procedures in this field.

On account of expenditure and distance to be covered by the members of this committee, it was not considered advisable to call a meeting during the past year, but to await a further progress report from the Dominion Bureau. However, it is our intention to hold a meeting during our three-day session in Montreal.

In conclusion, we wish to take this opportunity of thanking Mr. Macphail and his department for the concerted effort put forth to lay a foundation for a solution to our problem of non-resident births and deaths.

The following recommendations are submitted by the committee:

(1) That the Dominion Bureau of Statistics be asked to indicate what the future intentions are with regard to the coding of births and deaths by place of residence in national compilations.

(2) That a conference of the committee be held with the Bureau at an early date for the purpose of investigating the feasibility of a provincial interchange of certificates.

(3) That this committee be continued.

All of which is respectfully submitted.

T. E. ASHTON, *Chairman*

REPORT OF THE COMMITTEE ON RESOLUTIONS

THE Chairman of the Resolutions Committee, Dr. Wm. Warwick, presented the following resolutions which were unanimously adopted by the Executive Council and approved by the annual meeting in Montreal, June 13, 1934.

BE IT RESOLVED:

1. That this Association express to the members of the local committee on arrangements its thanks for and appreciation of the hospitality extended and the invaluable assistance which they have rendered towards the success of the convention.

2. That the Association extend its sincere thanks and appreciation to the

Provincial Government of Quebec and to the Corporation of the City of Montreal in acknowledgment of the dinner so kindly provided for its members.

3. That the thanks of the Association be extended to Dr. L. R. Vezina and Dr. J. Maynard for the courtesy and kindness shown to the members during the field visits to the County Health Units of St. John and St. Jerome.

4. That the thanks of the Association be tendered to the Press of Montreal for the generous allotment of space given to the papers and deliberations of this convention.

5. That the Association extend to the Management of the Windsor Hotel their sincere appreciation of the excellent service provided for the members during their stay in Montreal.

6. That the felicitations of the Canadian Public Health Association in convention be extended by a representative of the Association to the American Public Health Association in convention at Pasadena, California, in September.

7. That this Association endorse the recommendations of the committee on the form of the medical certificate of death as amended at the meeting of the Vital Statistics Section in conference with the provincial medical officers of health and registrars.

8. That this Association, realizing that it is of very great importance that medical students and medical practitioners be given special instructions in the principles governing death certification and the value of accurate statements on the medical certificate of death, request the co-operation of the Faculties of Medicine of our universities, the Canadian Medical Association and the various provincial medical associations in familiarizing physicians with this subject.

9. That the Association appoint a committee to study the question of salaries paid to medical officers of health in Canada, with special reference to the salary paid to part-time health officers.

10. That the Association endorse the action of the Laboratory Section in making available in suitable printed form a description of laboratory procedures and methods.

11. That this Association regret that any activity of the Federal Department of Health should be suspended or surrendered, and sincerely trust that the Federal Department of Health will be strengthened and its work extended.

12. That the Executive Committee be requested to take whatever steps it may deem necessary to keep in touch with the development of organized medical services, such as health insurance, in Canada.

13. That the Executive Committee be authorized to take whatever action it considers advisable to safeguard the interests of public health services as related to such organized medical services.

14. That the Editorial Board be requested to express the appreciation of the Association to Dr. George F. Buchan, Medical Officer of Health, Willesden, London, England, and Chairman of the Council of the Royal Sanitary Institute, for his interest in the Association in preparing for the JOURNAL a quarterly letter on public health events in Great Britain.

15. That the Association note with deep regret the death of, during the

past year, Dr. W. S. Downham, London, Ontario; Lieut.-Col. Arthur B. Chandler, B.A., M.D., C.M., Montreal; and Dr. H. L. Abramson, Saint John; and request that the Secretary be instructed to convey to the members of their families the sincere sympathy of the whole Association in their bereavement.

RESOLUTIONS FROM THE SECTIONS OF THE ASSOCIATION

SECTION OF VITAL STATISTICS

BE IT RESOLVED:

1. That a committee be appointed to define the activities which may be properly designated as health activities and to make recommendations regarding the form of health budgets with the desire for greater uniformity.

2. That the Section express its appreciation of the excellent work of the Dominion Bureau of Statistics and the generous co-operation which has been extended to committees of the Association on special studies and for its leadership in vital statistics throughout Canada.

PUBLIC HEALTH NURSING SECTION

BE IT RESOLVED:

1. That in future the term of office of the chairman and the secretary of the Section be two years, with the arrangement that they retire alternate years, and that the vice-chairman be appointed yearly when the place of meeting is decided.

2. That a committee of the Section be appointed to study such problems as may be referred to it, as suggested in the general secretary's memorandum and in the chairman's report.

REPORT OF THE COMMITTEE ON NOMINATIONS

THE following report of the Nominating Committee, under the chairmanship of Dr. M. R. Bow, was unanimously adopted by the Executive Council and approved by the annual meeting in Montreal, June 13, 1934.

OFFICERS, 1935

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ACCIDENTAL DEATHS

THE number of accidental deaths is doubly appalling in that the majority of these are in the younger age groups, young adults who have passed safely through early childhood and who are preparing to assume adult responsibilities. This unnecessary killing has become the most important cause of death in these age groups.

Excluding suicides and homicides, there were, in Canada, 5,114 deaths from external violence during the year 1933, all presumably the result of accident or carelessness. Deaths from this cause were exceeded only by deaths from cancer, diseases of the circulatory system and pneumonia, and were approximated only by tuberculosis. For years a struggle has been maintained against all forms of tuberculosis, and to-day control measures for cancer and circulatory diseases are being assiduously sought. The medical profession and the public alike wait with great expectancy for some preventive agent which will curb the major respiratory infections. But what have we attempted to do in the way of lessening the number of deaths from this manifestly more controllable cause?

Drownings and automobile accidents are most conspicuous on the list of causes. These are due, in the main, to carelessness. Otherwise sensible people who have been in nothing more formidable than a bath tub for a year will plunge into water of unknown depth and temperature, while young people unacquainted with the management of such frail craft as canoes will essay aquatic stunts with abandon. The demand for speed by drivers of motor cars is responsible for most of the thousand deaths which occur yearly in this country from this cause. Irresponsible individuals are permitted to run five-ton trucks at an extraordinary speed on narrow highways. Motor cars advertised to go seventy miles an hour are placed in the hands of youths who are only a decade from a perambulator; and a few socially minded people try to control this Frankenstein which they helped to create. Much has been attempted by voluntary agencies. Unfortunately, however, we find too frequently an attitude of laissez-faire among those who are or should be most concerned, namely, the public themselves.

LABORATORY SECTION

*Brucella Abortus Infection: Serum Experiments in Small Animals**

RONALD GWATKIN, D.V.Sc.

Department of Veterinary Science,
Ontario Research Foundation, Toronto

THE work carried on at the Ontario Research Foundation, under the Committee on Contagious Abortion, has been of a two-fold nature, namely, control measures in areas and individual herds, and laboratory experimental work. In our experiments, killed cultures and filtrates of *Br. abortus* did not produce any immunity in guinea-pigs, although as many as thirty injections of some of the preparations were given.[1]

A degree of immunity, which is more or less transitory, develops in cows that have passed through the first, or acute stage of the disease; and such animals, although infected, are able to carry their calves to full term. The foetal membranes of many of such animals are not infected, while in others the infection is slight. This is in marked contrast to the heavy infection in the membranes of cattle that abort. A comparison of the presence of *Br. abortus* in the placenta and milk of thirty-four full term, infected cows showed that 56 per cent had infected udders, while the organism was recovered from only 15 per cent of the placental membranes.[2] Vaccination with live cultures before conception produces, in some cattle, sufficient resistance to enable them to carry their calves to full term, but at the price of becoming infected animals in many cases.

While eradication of the infection from herds appears to be the only method of attack at the present time, there is need of some means of reducing losses in infected herds during the first or spreading stage, when such measures cannot always be applied. As killed cultures are not of value, and live cultures set up infection, our attention was turned to the possibilities of passive immunization with a serum produced against living cultures of the organism.[3,4] Reports on the use of serum in Bang's Disease are disappointing. We have referred elsewhere to some of these.[3]

Rundberg[5] reports that normal serum contains active bactericidal agents for *Br. abortus* but that immune sera obtained by vaccination, although more or less rich in agglutinins, precipitins and complement fixing antibodies, never show, in comparison with normal sera, an increase in bactericidal properties, either *in vivo* or *in vitro*. Leucocytes and immune serum, used together, *in vivo*, appeared to have some protective action.

EXPERIMENTAL

Preparation of Guinea Pig Immune Sera

Large guinea-pigs were selected for serum production. They were given weekly intra-peritoneal injections of a suspension of fresh, living *Br. abortus*. The suspension was prepared by emulsifying one liver agar slant of four day growth of the organism in 15 cc. saline. The initial dose was 0.5 to 1.0 cc. Six to fifteen injections were given and the animals were exsanguinated from one to two weeks after

**Presented at the Christmas meeting of the Laboratory Section, Canadian Public Health Association, Toronto, December 22, 1933.*

the last injection. The mortality was always high, but this was lessened by the use of sensitized suspensions.

The protection test latterly employed was the intra-peritoneal injection of four guinea-pigs six times, over a period of two or three weeks, with 5 cc. doses of serum. These animals and two normal guinea-pigs were exposed to infection by mouth or eye, or both, the day following the first injection of serum. Weekly agglutination tests were made and the guinea-pigs were killed six weeks or more after commencement of the experiment. For exposure by mouth 1.0 cc. of a suspension equal to tube No. 2 of McFarland's nephelometer was used, while for exposure by eye, one drop was used of a suspension of such a density that when diluted 1:25 it was equal to tube No. 1 of the nephelometer.

PROTECTION TESTS

(*a*) *Using Pooled Bovine Sera (Naturally Infected)*

The pooled serum had an agglutinin titre of 1:10,000. Guinea-pigs were given one injection of from 1 to 10 cc. and were infected the following day by mouth and eye, and in one group by intra-peritoneal injection. There was delay in agglutinin production in the serum treated animals, but all were shown to be infected when killed 44 days after infecting dose.

(*b*) *Sera from Immunized Guinea-Pigs*

In the next series guinea-pig serum was employed. These animals had received from 6 to 12 weekly injections of living cultures. Blood was collected 10 days after the last injection. The pooled serum was preserved with 0.5 per cent phenol in ether. Three groups of 5 guinea-pigs were given 2.0 cc., 1.0 cc. and 0.5 cc. of serum by intra-peritoneal injection twice at an interval of 2 weeks. One group received normal serum and another no serum. They were exposed to infection by mouth and eye one and three days after the first injection of serum. When killed 77 days after the first infecting dose, one of the animals that had received two injections of 2 cc. serum was found to have been protected. It was negative to the agglutination test, free from lesions and negative on culture. All the other animals were infected.

Five weekly injections of 2 cc. of a second lot of guinea-pig serum were given to another group, which was infected by mouth and eye the day after the first injection. At the conclusion of the experiment two of four animals were negative to the agglutination test. Post-mortem and cultural examinations showed that one of these was free from infection. The other had an enlarged spleen, from which *Br. abortus* was received.

The next test was made with a third lot of guinea-pig serum and also bovine serum. Both were preserved with phenol. These animals were exposed to injection by mouth and eye the day following the first injection of serum. The dosage was increased to 5 cc. and five intra-peritoneal injections were given at intervals of three and four days. All four guinea-pig serum animals, and one of the bovine serum group, were free from infection when killed 66 days after commencement of the experiment. The four controls were all infected. Six injections of the fourth lot of guinea-pig serum protected only two out of four animals. The controls were all infected.

(*c*) *Sera from Immunized Rabbits*

The serum of rabbits that had received repeated injections of *Br. abortus* was stored for a year at approximately 8°C. When used for this experiment it had an agglutinin titre of 1:2,500 and complement-fixing titre of 1:5,000. Two guinea-pigs were given 6 injections of 5 cc. over a period of two weeks, two were given 6 injections of 1 cc., and two were untreated. All were exposed to injection by eye. Six weeks after commence-

ment of the experiment the four treated animals were negative by the agglutination and complement fixation tests, while the controls were positive. Post-mortem and bacteriological examination showed the former to be uninfected, while the latter had lesions and *Br. abortus* was recovered from their spleens.

From one to six injections of 1.0 cc. of another lot of freshly prepared rabbit serum failed to protect against infection. A single injection of 5 cc. likewise failed to protect. There was delay in the appearance of agglutinins, but all twenty animals were eventually shown to be infected.

(*d*) *Bovine Sera (Previous Reactor and from Normal Cattle)*

Serum from a cow that had been a reactor for at least two years and had become negative was employed in a series of experiments similar to the foregoing. Normal cow serum was also used. As had been previously noted,[6] the intra-peritoneal injection of bovine serum caused a good deal of disturbance, and several guinea-pigs died as a result of this.

From these experiments it appeared that fresh, normal bovine serum exerted an inhibitory action on the production of agglutinins. The difference between serum that had ceased to react and normal serum was so slight that the inhibitory action of the former could only be considered as normal.

(*e*) *Treatment of Infected Guinea-Pigs with Bovine and Guinea-Pig Serum*

Sera from cows and guinea-pigs failed to modify the termination of an established infection in guinea-pigs. When commenced sufficiently early it inhibited agglutinin production to some extent, but all animals were subsequently shown to be infected. One guinea-pig apparently was benefited by the injection of serum, there being a marked improvement in condition in a few days. The infection persisted, however, as shown by post-mortem and cultural examination.

Preparation of Immune Sera Using Cows and Horses

Following these experiments, Gwatkin and LeGard[7] employed live cultures in cows for the production of serum. This was not successful, the serum of the three cows used in these experiments not being as potent as that obtained from animals in the field.

It was then decided to try the horse as a serum producing animal.[8] The serum of one mare, after a series of injections of live culture and rest periods covering about six months, did not protect guinea-pigs against exposure to infection by eye with *Br. abortus*. The agglutinin and complement fixing titres of this animal also remained low. The maximum of the former was 1:250 and of the latter 1:2,500, and most of the time they were 1:100 and 1:1,000, respectively.

The serum of a second mare protected one out of four guinea-pigs 25 days after commencement of the experiment and after seven injections of sensitized, live culture had been given. Forty-eight days later this animal's serum again protected one out of four guinea-pigs, and a second one was negative to the agglutination test and showed no lesions, but a few colonies of *Br. abortus* developed on a spleen culture. A week later this mare had to be destroyed. The maximum agglutination and complement fixing titres attained were 1:100 and 1:2,500, respectively.

Immune sera which were protective to guinea-pigs were not bactericidal in regular *in vitro* bactericidal tests. These sera were used in solid and liquid media for the development of R variants of *Br. abortus* and this organism grew freely in their presence.

DISCUSSION AND SUMMARY

We have been able to protect guinea-pigs against exposure by mouth

and eye with *Br. abortus* by repeated intra-peritoneal injections of anti-abortus guinea-pig, rabbit, cow and horse serum. The best results were obtained with guinea-pig and rabbit serum. Cow serum was the least satisfactory. Bovine serum, following repeated injections of cows with living *Br. abortus,* was not more protective than that obtained from cases of natural infection. These experiments show that protective antibodies appear in the blood following injections of living *Br. abortus,* and are present in natural infection, although decidedly variable in both cases. All the control animals became infected. We have not had a failure to infect guinea-pigs by the methods employed in any of our experiments during the last three years. No guinea-pig vaccinated with killed cultures or filtrates has shown any resistance, whereas some of the serum treated animals have been definitely protected. Three criteria were demanded as evidence of freedom from infection, namely, absence of lesions, negative cultural results, and absence of agglutinins and complement fixing bodies, because lesions are sometimes absent; cultures may prove negative, even though the animal has a positive blood reaction or lesions; and some animals negative to both tests have yielded *Br. abortus* on culture.

As would be expected, different lots of pooled serum varied in protective power, but with the 5 cc. dose and repeated injections some protection was evidenced in each group. These sera did not show any bactericidal activity *in vitro.*

The serum of a cow that had been infected, but had ceased to react, behaved in the same manner as normal serum. Both produced some delay in the appearance of agglutinins but failed to protect the exposed animals.

Serum treatment of an established infection in guinea-pigs did not modify the termination, but in one instance a guinea-pig showed marked clinical improvement following injection of serum. These sera were not of high prophylactic value, as shown by protection tests, so not much curative action could be expected from their use.

These experiments deal only with the protection of guinea-pigs, and, even if a potent horse serum were developed for these animals, possibility of its application to this infection in cattle would depend, apart from the primary consideration of the suitability of the serum *per se,* upon such other factors as the size and frequency of injections required to carry an infected animal through a full time gestation period, or to protect clean cows against infection. These questions can be answered only by experiments with the host animal.

ACKNOWLEDGMENTS

The writer is grateful to Dr. H. B. Speakman and Dr. S. Hadwen for their interest and advice in connection with this work, which was made possible by a grant from the Department of Agriculture of Ontario, and was carried on under the Committee on Contagious Abortion of the Ontario Research Foundation.

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FULTON SCHUYLER VROOMAN, M.B.

DR. FULTON SCHUYLER VROOMAN, Superintendent of the Ontario Hospital, London, for the past four years, died in that city on July 10th after an illness of several weeks following an operation for appendicitis.

The son of Dr. and Mrs. A. E. Vrooman, Dr. Vrooman was born in Lindsay, Ontario. During his distinguished career he had served in virtually every provincial mental hospital in Ontario and had been Superintendent at a number of these. In 1907 he joined the staff of the Ontario Hospital at London in a junior capacity and subsequently was promoted and transferred to other hospitals throughout the province, including the institutions at Toronto and Mimico, of both of which he was at one time Superintendent. During the War he served overseas with the Canadian Medical Army Corps and was stationed at Orpington Hospital. He was also in charge of the first hospital for shell-shocked men, located in Cobourg, Ontario.

Surviving Dr. Vrooman are his widow, a son, Adam, a daughter, Barbara, and his parents. In his death the province of Ontario has lost an outstanding psychiatrist and a leader in the mental hygiene movement.

NEWS FROM THE FIELD

Annual Meeting American Public Health Association

THE sixty-third annual meeting of the American Public Health Association will be held in Pasadena, California, September 3rd to 6th, with headquarters at the Huntington and the Maryland Hotels. Arrangements have been made for a special two-weeks' convention tour, leaving New York on August 28th. Members may join at different points throughout the country and the tour makes it possible for them to confer on public health problems while travelling over scenic routes to the convention and to make stop-overs at San Francisco, Stockton, Sacramento, Salt Lake City and Denver on the invitation of local health officials.

Maternal Mortality in Canada

THE Dominion Bureau of Statistics has just issued the preliminary figures for the number of maternal deaths and the maternal death rates by provinces for the year 1933. The corresponding deaths and death rates for 1932 are shown in parenthesis.

Maternal deaths: Canada, 1,107 (1,181); Prince Edward Island, 8 (13); Nova Scotia, 49 (53); New Brunswick, 61 (63); Quebec, 381 (421); Ontario, 346 (343); Manitoba, 54 (68); Saskatchewan, 92 (102); Alberta, 72 (64); British Columbia, 44 (54).

Rate per thousand live births: Canada, 5.0 (5.0); Prince Edward Island, 4.1 (6.4); Nova Scotia, 4.4 (4.6); New Brunswick, 6.1 (5.8); Quebec, 5.0 (5.1); Ontario, 5.4 (5.1); Manitoba, 4.1 (4.8); Saskatchewan, 4.6 (4.9); Alberta, 4.5 (3.8); British Columbia, 4.6 (5.3).

The Bostock Hill Memorial

AS a memorial to the late Professor Bostock Hill, the Council of the Royal Sanitary Institute, London, have decided to offer for award annually a challenge shield for the best celebration of Health Week in the Empire outside the British Isles. In view of the great interest which was taken by the late Professor Bostock

Hill in the Health Week movement from its inception, the challenge shield will be known as the Bostock Hill Memorial. Professor Bostock Hill was for many years chairman of the Empire Health Week Committee of the Royal Sanitary Institute. The date fixed for Health Week this year is the week October 7th to 13th and overseas centres wishing to enter the competition for this shield must submit full programmes and reports of any celebration held by December 31, 1934.

Alberta

THE HONOURABLE GEORGE HOADLEY has been reappointed as Minister of Health in the Cabinet of the new Premier, the Honourable R. G. Reid.

Following the adoption by the Legislature of the basis of health insurance as outlined in the report of the special commission, the Provincial Department of Health is organizing a special health unit in which to test the scheme. A district with a good municipal hospital, surrounded by a good farming district where crop failures seldom occur, is being chosen. If the area for which the unit is planned votes in favour of the financial obligation involved, it is expected that enabling legislation will be passed next winter. The Government would contribute a grant equal to two-ninths of the cost of the experiment.

Saskatchewan

DR. J. M. UHRICH has been appointed Minister of Public Health in the Cabinet, following the recent provincial election.

Ontario

DR. J. A. FAULKNER, of Belleville, has been appointed Minister of Health for Ontario under the Honourable Mitchell Hepburn, succeeding Dr. J. M. Robb.

Miss Eunice H. Dyke, Reg.N., has joined the staff of the Canadian Council on Child and Family Welfare as secretary of the Division on Maternal and Child Hygiene. Miss Dyke was formerly Director of Public Health Nursing for the City of Toronto.

On assuming office, the Provincial Government has announced the discontinuance of the office of District Officer of Health in the Department of Health. Since 1912 the province has been divided into health districts under the supervision of a district medical officer. Eight officers are affected by this decision.

The following promotions in the Ontario Hospital Service have been announced by the Honourable Dr. J. A. Faulkner, Minister of Health: Dr. George H. Stevenson, the present superintendent of the Ontario Hospital, Whitby, to become superintendent of the Ontario Hospital, London, succeeding the late Dr. F. S. Vrooman; Dr. D. R. Fletcher, superintendent of the Ontario Hospital, Brockville, to become superintendent at Whitby; Dr. C. S. Tennant, superintendent at the Ontario Hospital, Woodstock, to become superintendent at Brockville; Dr. D. O. Lynch, superintendent at the Ontario Hospital, Penetanguishene, to succeed to the Woodstock superintendency; and Dr. C. A. McClenahan, acting superintendent of the Ontario Hospital, London, to become superintendent of the Penetanguishene institution.

Quebec

AT the annual meeting of the Canadian Tuberculosis Association which was held in Montreal on June 11th-13th in conjunction with the annual meeting of the Canadian Public Health Association, Dr. J. A. Couillard, of Lake Edward, was re-elected president, together with all former officers, and Dr. J. E. Dube, president of the Bruchesi Institute, Montreal, was added to the executive.

BOOKS AND REPORTS

Brucella Abortus Infections in Animals and Man. *By I. Forest Huddleson, Department of Bacteriology and Hygiene, Michigan State College. Published by The Commonwealth Fund, 41 East Fifty-seventh Street, New York,* 1934. 125 *pages. Price,* $2.25.

The purpose of this book is to provide the laboratory worker with a practical guide for the diagnosis and study of brucella infections and to assist the clinician in the interpretation of the results obtained in the laboratory.

No attempt has been made to deal exhaustively with any phase of the subject. In the opinion of the author, "The inclusion of too many procedures would lead only to confusion." One appreciates the experience and judgment necessary in making a wise choice of what is to be included. This rigid selection of material has resulted in a monograph which, in its clear-cut treatment of the essential outline of the subject, has the character of a silhouette.

The usefulness of the book is considerably enhanced by the description of practical innovations in technique and by the instructive and apposite photographs. Although the small size of the volume renders the index relatively unimportant, one could wish it more complete. An extensive bibliography is included which is confined to articles in English or which have been translated into English.

While almost every bacteriologist and many clinicians would probably find something of interest, it is to the laboratory worker who is not already familiar with this field that the book should prove most useful as a laboratory manual and also as a starting point for further study.

F.H.F.

International Clinics. *A quarterly of illustrated clinical lectures and original articles. Edited by Louis Hamman, M.D. Vol. IV, Forty-third series,* 1933, *and Vol. I, Forty-fourth series,* 1934. *Published by the J. P. Lippincott Company,* 525 *Confederation Building, Montreal. Vol. IV,* 317 *pages; Vol. I,* 320 *pages. Price per volume,* $3.00; *for the four volumes of each year,* $12.00.

To bring to the practising physician the newer knowledge of the diagnosis and treatment of disease in all its forms as presented by leading internationally known clinicians is the objective of the collaborators who are responsible for the publication of *International Clinics.* Four volumes are issued each year and the publication is now in its forty-fourth series.

Volume IV of the forty-third series covers such topics as the treatment of obesity, hypertension, serum treatment of pneumonia, endocrine gland products and their use. The surgical part deals with Paget's disease of the nipple, brain tumours, pigmented moles, dental disturbances and injuries in children. The clinical pathology section describes rupture of the aorta.

Volume I of the forty-fourth series has a number of very interesting articles on hepatic disease, jaundice, heart disease, old age conditions, the rôle of the vegetative nervous system in gastro-intestinal disease. The pediatric section contains a long symposium on lead poisoning, and the volume ends with an article by Dr. Donald Balfour on advances in abdominal surgery.

The subjects are presented largely in the form of illustrated clinical lectures, with specially prepared articles reviewing certain subjects. *International Clinics* has achieved an outstanding position in current medical literature.

D.L.M.

CURRENT HEALTH LITERATURE

These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (after three days) is requested in order that the journals may be available to other readers.

The Preventive Aspects of Medicine: XXIV, Principles of Immunization and Preventive Disease

This is an excellent brief review of the subject indicated by the title. The mechanisms of antibacterial and antitoxic immunity are discussed and the methods of exploiting specific immunization (active and passive) are indicated. The modern concept of specificity as dependent on special arrangements of active groupings in antigen and antibody is referred to and specificity is discussed in relationship to antitoxic and antibacterial immunity. The remainder of the lecture is devoted to the concord between expectation and experience and in this section specific prophylaxis in smallpox, enteric, lobar pneumonia, diphtheria, scarlet fever, common cold and influenza is discussed.

W. W. C. Topley, Lancet, *226*: 1185 (June 2), 1934.

Effect of Inhaled Marble Dust

This report deals with the clinical and roentgenographic findings on 80 marble finishers. Although there was a mild linear fibrosis in some cases, no serious lung changes were noted and there was no disability even after many years of exposure.

W. C. Dreesen, U.S. Pub. Health Rep., 49: 724 (June 22), 1934.

A Dermatitis due to Aniline Dye in a Food Product

A case is reported in which a certain green colouring matter in the patient's food produced both a dermatitis and gastro-intestinal symptoms. It is not certain whether the symptoms represented a true allergic reaction or a true toxic action of the substance.

Harry Leonard Baer, J.A.M.A., *103*: 10 (July 7), 1934.

Observations on Actinomycosis

Actinomycosis appears to be on the increase. Seven cases of this disease are described and its treatment discussed.

Stuart Gordon, Canad. M.A.J., *31*: 54 (July), 1934.

Silicosis and the Metabolism of Silica

Silica in small amounts appears to be a natural constituent of all animal tissue. The kidney threshold for silica is low and this substance is rapidly excreted in the urine when it reaches the blood either by absorption from the gut or solution in the lung. Persons exposed to silica dust have a higher level of urinary excretion of silica. Attempts to influence the absorption of silica from the lungs by the administration of alkali were inconclusive. The colorimetric determination of silica in urine is described.

Earl J. King and Margery Dolan, Canad. M.A.J., *31*: 21 (July), 1934.

Recent Advances in the Pathology and Treatment of Lymphadenoma

Dr. Gordon's contribution deals with recent advances in the pathology of lymphadenoma. Experimental investigations are outlined. The results of the Gordon Biological Test show that this test is of very definite value in the diagnosis of lymphadenoma. An agent which produced an encephalitic condition in the rabbit was present in 30 out of 35 specimens of glands from lymphadenoma. Glands from 67 cases of other conditions all gave negative results. Elementary bodies found in lymphadenoma glands are pictured and an intracutaneous allergic reaction is referred to in Dr. Gow's contribution.

M. H. Gordon and A. E. Gow, Proc. Roy. Soc. Med., *27*: 49, Section of Medicine (June), 1934.

Methylene Blue in Illuminating Gas Poisoning

Current reports on the value of methylene blue in illuminating gas poisoning are contradictory. The authors approached the question by determination of the prophylactic value of this dye in experimental illuminating gas poisoning in white rats. There was no significant difference in the comparative lethal interval when methylene blue injected and control rats were gassed together.

L. Mack and E. A. Smith, Proc. Soc. Exp. Biol. & Med., *31*: 1031 (June), 1934.

Technique of Sterilization

Methods of sterilization are discussed and techniques for vasectomy and salpingectomy described. Regarding after effects, the Brock Committee received replies from 22 teaching hospitals and these would seem to indicate clearly that no prejudicial mental or physical effects follow the operation. The risk in vasectomy is nil and subsequent operation has restored fertility. The risk in salpingectomy is equal to that in a quiescent appendicectomy and the method is not infallible.

Lancet, *226*: 1291 (June 16), 1934.